H-2 Preliminary Hydrology Report



ENCINITAS SENIOR APARTMENTS 3111 Manchester Avenue City of Encinitas, CA

PRELIMINARY HYDROLOGY REPORT

Prepared For:

Greystar

444 South Cedros Avenue, Suite 172 Solana Beach, CA 92075

Prepared By:



Urban Resource Corporation

23 Mauchly, Suite 110 Irvine, CA 92618

June 17, 2019

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OVERVIEW

The following site is located at 3111 Manchester Avenue in the City of San Clemente, California. The project site is located within a parcel with an area of 19.03 acres, which consists of an existing strawberry farm and agricultural field. The approximate area within the proposed limits of work is 9.9 acres.

The site is bound by Manchester Avenue to the southeast, and existing mountainous terrain and open space are located to the north and the west.

Offsite run-on in the existing condition and proposed condition is a major tributary drainage area through the existing site. Approximately 28 acres of existing residential development outlet into the mountainous terrain and open space area located to the north of the project, and approximately 39 acres of the existing mountainous terrain and open space to the north currently passes through the existing site towards Manchester Avenue via an existing earthen channel. Flows are then conveyed across Manchester Avenue in existing 18" and 24" CMP storm drain lines, and into San Elijo Lagoon.

In the developed condition, offsite run-on from the north will be collected by proposed concrete channels and/or v-ditches to located along the northerly, easterly, and westerly limits of work for the project, and routed to outlets, and conveyed through the project via proposed RCP storm drain lines, which will bypass the onsite biofiltrations, and outlet to new RCB and/or RCP pipes that will run beneath Manchester Avenue, and into the San Elijo Lagoon. Onsite stormwater flows within the limits of work will be collected into a separate onsite storm drain system to allow for water quality treatment of the disturbed project areas.

A portion of the project is located in Flood Zone A per FEMA FIRM Map 006073C1045G, dated May 16, 2012, and an evaluation pertaining to the base flood elevation for the site is included herewith.

Purpose

The preliminary hydrology analysis herewith is prepared to analyze the existing hydrology of the site, including the existing offsite areas north of the site, and to analyze the developed condition hydrology, to determine if the development significantly increases storm flows in the ultimate condition. A comparison of storm flows from this preliminary analysis is summarized herewith. The 100 year storm flows will be evaluated for the existing condition and developed condition, to evaluate the preliminary sizing of the biofiltration basins, and the potential need for additional storage to reduce post development storm volumes to the predeveloped condition volumes.

Additionally, an analysis of the available flood zone information for the site location will be conducted to estimate the base flood elevation for the site.

Methodology

Hydrology analysis of Encinitas Senior Apartments is based on the County of San Diego Hydrology Manual. The Rational Method is utilized to determine peak flow rates for a drainage area of less than 1 square mile. The Modified Rational Method (MRM) is utilized in the hydrology study for junction confluence of flow streams per the County of San Diego Hydrology Manual guidelines.

The Advanced Engineering Software (AES) package for San Diego County is utilized for the Rational Method hydrology analysis.

Parameters used for the rational method analysis are listed below.

- 1) Storm Events 25 year and 100 year
- 2) Precipitation (100 year event): P₆=2.5" (See appendix C for supporting documents)
- 3) Precipitation (25 year event): $P_6=2.0$ " (See appendix C for supporting documents)
- 4) Soil Type A and D per NRCS Soils Map and per San Diego County Hydrology Manual
- 5) Land Use Mountain Brush, Good Cover (existing offsite condition)
- 6) Land Use 7.3 Dwellings/Acres or Less (proposed condition landscaped slope; conservative)
- 7) Land Use Urban Newly Graded Areas (proposed condition landscape slope)
- 8) Land Use 14.5 Dwellings/Acres or Less (existing offsite residential)
- 9) Land Use 43.0 Dwellings/Acres or Less (proposed onsite residential)
- 10) Land Use Fallow Bare Soil (existing agriculture)

Storm volumes for the 100 year storm event utilizes the equation below per Section 6 of the County of San Diego Hydrology Manual. Runoff coefficient, C values utilized are selected from Table 3-1 in Section 3 of the Hydrology Manual.

$$V=C*(P_6/12)*A*43,560$$

Where: V=Volume of Runoff (cf)

C=runoff coefficient

P₆=6-hour rainfall (inches, 100 year storm)

A=Drainage Area Analyzed (acres)

All calculations are provided in the Appendix.

Hydraulic Analysis

The Water Surface Pressure Grading (WSPGW) software by CivilDesign Corporation is used for hydraulic analysis.

Hydraulic Analysis of the existing CMP culvert crossings have been conducted to analyze the flow velocity into the San Elijo Lagoon, at the existing culvert outlets. There are 6 CMP pipes that convey flows from the existing site, as well as flows offsite to the north, into the San Elijo Lagoon. The six existing pipe crossings are summarized in the table below, including the storm drain line label, and pipe sizes specified in the Manchester Widening Improvement Plan As-built drawings No. SI-0021. The maximum water surface elevation utilized is the street gutter flow line high point in Manchester Avenue, at Station 5+50, obtained from the as-built plan sheet 3A. That elevation is 10.44EL. Any storm water above that elevation will overflow and be contained in Manchester Avenue. Hydraulic analysis results will indicate whether the water surface elevation utilized is suitable for estimating the maximum flow velocities at the existing outlets into the lagoon. The as-built plan is included in Appendix D for reference. A summary table of parameters utilized, and the results, is included in Appendix C. The velocity values obtained from the hydraulic analysis of the existing CMP pipes are utilized as a control velocity at the existing outlet location.

Existing CMP Storm Drain Table

SD Line	SIZE	NO. OF PIPES
В	24	2
С	24	1
D	18	1
Е	18	1
F	18	1

Preliminary hydraulic analysis for the proposed condition is included in this report for the purpose of preliminary storm drain sizing of the proposed culverts in Manchester Avenue. Hydraulic calculations with varying pipe and box sizes were run utilizing WSPG to evaluate the outlet velocity into the lagoon. Note that the storm drain alignments in the analysis are dummy models of the culvert crossings, and the models during final engineering will be refined to accurately model the final proposed storm drain design. The purpose of the analysis is to approximate sizing for the culvert crossings to reduce the flow velocity at the outlets into the lagoon, such that they are at or below the existing condition velocity at the outlet location into the lagoon. A summary of the proposed storm drain crossings in Manchester Avenue is provided in the following table. Additionally, the proposed storm drain is located such that they are at or very close to the vicinity of the existing storm drain crossings in Manchester Avenue, so the corresponding existing storm drain line is indicated in the table below for location reference. Refer to the Preliminary Manchester Avenue Storm Drain Exhibit provided in Appendix D for existing and proposed storm drain in Manchester Avenue.

Proposed Storm Drain Table

SD		
Line	Type/Size	Ex. SD Location
Α	2 - 4'Wx1.5'H RCB	В
В	18	В
С	18	С
D	18	D
E	5'Wx1.5'H RCB	E
F	5'Wx1.5'H RCB	E

Note: Refer to Preliminary Manchester Storm Drain Exhibit for storm drain location (Appendix D)

Flood Zone Analysis

A portion of the project front Manchester Avenue and located in Flood Zone A per FEMA FIRM Map, with no specified base flood elevation. An analysis of the FEMA Firm Map, as well as the City of Encinitas online FIRM Viewer and Escondido Floodway Data Table, shows that there is a downstream Flood Elevation of 9.0EL (Zone AE), and an upstream Flood Elevation of 15.4EL (AE). Additional research was conducted utilizing the Final EIR report for the San Elijo Lagoon Restoration Project. Data obtained from the report indicates that the Base Flood Elevation in the vicinity of this project is 12.4EL in the existing condition. Furthermore, once restoration of the Lagoon is complete the flood elevation in the vicinity of this project will be lowered to 9.0EL, for Alternative 1B. Per the San Elijo Lagoon Restoration webpage's Frequently Asked Questions page, the plan adopted is a Modified Alternative Plan 1B Reduced. Supporting documents obtained from the Final EIR and the San Elijo Lagoon webpage are included in Appendix E.

Refer to the markup in the ArcGIS Web Map included in Appendix E for more information. The FEMA FIRM Map and Escondido Creek Floodway Data is included in Appendix E for reference.

Conclusion

Based on the preliminary hydrology analysis for the existing and proposed condition, there will be an increase in peak flowrate of approximately 17% for the 100 year and 25 year storm events, due to the proposed development. Further analysis of the storm runoff volume for the 100 year storm event indicates an increase in runoff volume due to the proposed development. Three biofiltration basins will be provided for the purpose of water quality treatment and hydromodification control but will also act to reduce and slow the release of the volume, as the basins provide 15" of ponding, and subsurface media pore space, and gravel void space for storage. Additionally, the underdrain flow

control system will restrict flow release with an orifice. Based on preliminary evaluation of the sizes and storage volumes available in the three biofiltration basins, additional storage is not necessary, and any increase in storm volumes for the 100 year storm event would be mitigated by the proposed biofiltration basins. Calculations are provided in Appendix D.

A comparison of peak flow rates is provided in the table below. Note that these flows do not include the street flows from Manchester Avenue, as the street flow is considered offsetting between the existing and proposed condition. Additional hydrology analysis will be conducted during final engineering.

Peak Flowrate Summary Table

	Existing Condit	tion	Proposed Condition			
Node	Q100 (cfs)	Q25 (cfs)	Node	Q100 (cfs)	Q25 (cfs)	
13	70.64	55.02	15	66.77	52.00	
21	12.26	9.78	23	8.63	6.89	
Total:	82.90	64.80	33	4.76	3.79	
			43	12.94	10.31	
			53	7.28	5.75	

Total: 100.38 78.74

Results of the preliminary hydraulic analysis are provided in the following tables. Preliminary sizing of the Manchester Avenue culvert crossings is also provided. Note that the locations of the proposed culvert crossings are set such that they are outletting into the lagoon at or very close to the existing outlet locations. Preliminary hydraulic analysis of the proposed storm drain crossings in Manchester Avenue show that the outlet flow velocity at the proposed outlets do not exceed the flow velocity at the existing outlets, except for proposed Storm Drain Line 'E', which has a small increase of 3%. Based on the results of the preliminary hydraulic analysis, it is feasible to reduce outlet flow velocities to at or below existing condition outlet flow velocities with the appropriate storm drain sizing. Additional design considerations may also be incorporated onsite, during final engineering design, such as onsite detention systems, in order to reduce outlet flow velocity, if necessary.

Hydraulic calculations are provided in Appendix C.

Hydraulic Results Table - Existing Storm Drain

Try traune Results Tuble – Existing Storm Drain							
		MAX HEAD	OUTLET	Q OUT	Velocity	CMP SIZE	No. of
EX. SD	MAX WSE	(ft)	ELEV. (EL)	(cfs)	(fps)	(in.)	Pipes
В	10.44	3.53	6.91	23.90	8.27	24	2
С	10.44	2.23	8.21	17.64	6.92(1)	24	1
D	10.44	1.50	8.94	8.10	5.82 ⁽¹⁾	18	1
Е	10.44	1.44	9.00	7.12	5.49 ⁽¹⁾	18	1
F	10.44	0.85	9.59	3.55	4.24(1)	18	1
			Total:	84.21(2)			

Notes:

- 1. These velocities for the existing storm drain crossings are used as the maximum allowable velocities at the existing outlet locations into the lagoon.
- 2. The total peak flow conveyed by the six existing CMP pipes is 84.21cfs based on the parameters of the analysis. The total existing condition flows per Hydrology Map nodes 14 and 21, including street flows, is Q100=85.07cfs; therefore, since the max WSE of 10.44cfs resulted in very similar peak flows into the lagoon, it can be concluded that the WSE utilized is suitable for estimation of the existing storm drain outlet maximum velocities into the lagoon.

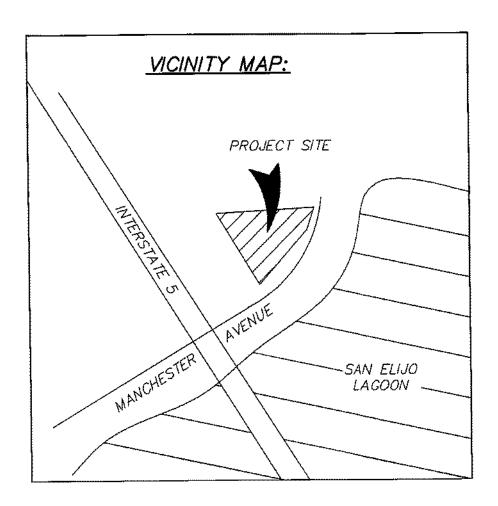
Hydraulic Results Table - Proposed Storm Drain

		Proposed Outlet	Existing Outlet	
SD Line	Q100 (cfs)	Velocity (fps)	Velocity (fps)	Type/Size
A (offsite)	66.77	6.45	6.92	2 - 4'Wx1.5'H RCB
В	7.28	5.54	6.92	18
С	7.03	5.46	5.82	18
D	2.26	3.68	5.49	18
Е	12.94	4.37 ⁽²⁾	4.24	5'Wx1.5'H RCB
F (offsite)	11.44	4.19	4.24	5'Wx1.5'H RCB

Notes:

- 1. Line A and F convey offsite/undeveloped flows only.
- 2. Line E outlet velocity is higher than existing control velocity by 3%. Additional analysis to be conducted during final engineering to upsize and/or provide mitigation (ie. detention system or other) onsite.
- 3. Hydraulic analysis for Line B and E utilizes Q100 for a conservative analysis.
- 4. Hydraulic model of each storm drain is a dummy model for preliminary analysis purposes, and will be updated to match the final design during final engineering.

The base flood elevation estimated for the site is approximately 12.4EL, and is based on the available information, included herewith. The building finish floor elevation is currently set to no lower than 17.0EL for the senior care facility, and 19.57EL and higher for the work force units. Therefore, the buildings are not located in the 100 year flood zone.



II. REFERENCES

- 1. Hydrology Manual, County of San Diego, June 2003.
- 2. RATSCx (Rational Method Analysis), Advanced Engineering Software (AES), 2011.
- 3. HELE I (Hydraulic Elements I), Advanced Engineering Software (AES), 2011.
- 4. WSPGW (Water Surface Pressure Gradient Software), CivilDesign Corporation, Version 12.99.
- 5. San Elijo Lagoon Restoration Webpage, https://thenaturecollective.org/project/san-elijo-lagoon-restoration/.
- 6. Final Environmental Impact Report, San Elijo Lagoon Restoration Project SCH#2011111013, Volume 2 of 4, February 2016.

APPENDIX A – EXISTING RATIONAL METHOD HYDROLOGY 25, 100 YEAR STORM EVENT

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RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
Reference: SAN DIEGO COUNTY FLOOD CONTROL DISTRICT
2003,1985,1981 HYDROLOGY MANUAL
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(c) Copyright 1982-2011 Advanced Engineering Software (aes) Ver. 18.0 Release Date: 07/01/2011 License ID 1585

Analysis prepared by:

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******************************** DESCRIPTION OF STUDY **************************
* ENCINITAS SENIOR LIVING
* EXISTING CONDITION HYDROLOGY
* 100 YEAR STORM EVENT
ETTE NAME: 624EX188.188
 TIME/DATE OF STUDY: 10:48 05/31/2019
USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
2003 SAN DIEGO MANUAL CRITERÍA
 USER SPECIFIED STORM EVENT (YEAR) = 180.00
 6-HOUR DURATION PRECIPITATION (INCHES) =
 SPECIFIED MINIMUM PIPE SIZE(INCH) = 4.00
 SPECIFIED PERCENT OF GRADIENTS (DECIMAL) TO USE FOR FRICTION SLOPE = 8.98
 SAN DIEGO HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
 NOTE: USE MODIFIED RATIONAL METHOD PROCEDURES FOR CONFLUENCE ANALYSIS
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
    HALF- CROWN TO STREET-CROSSFALL: CURB GUTTER-GEOMETRIES: MANNING WIDTH CROSSFALL IN- / OUT-/PARK- HEIGHT WIDTH LIP HIKE FACTOR
NO. (FT) (FT) SIDE / SIDE/ WAY (FT) (FT) (FT) (N)
= ## ####
         日の工作をものをひ ニュジェススのおおおおおおお フェニュニュ
          20.0 0.018/0.018/0.020 0.67
                                        2.00 0.0313 0.167 0.0150
 1 30.0
  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
   1. Relative Flow-Depth = 0.00 FEET
     as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)

    (Depth)*(Velocity) Constraint = 6.0 (FT*FT/S)

  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
FLOW PROCESS FROM NODE 1.00 TO NODE 3.00 IS CODE = 21
 >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<
고고 교회자 중국 한국 한국 한국 분류 및 분류 및 유리 프로그를 모르고 프로그를 모르고 보고 보는 발생 보는 보는 보는 보는 보는 보고 보고 보고 보고 보고 되고 있다. 본토와 또 한화 보고
  RESIDENTIAL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .6300
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) = 89
  INITIAL SUBAREA FLOW-LENGTH(FEET) =
                                 79.99
  UPSTREAM ELEVATION(FEET) = 380.00
  DOWNSTREAM ELEVATION(FEET) =
                           379.30
  ELEVATION DIFFERENCE(FEET) -
                             0.70
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =
                                  6.821
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
         THE MAXIMUM OVERLAND FLOW LENGTH =
                                       65.00
         (Reference: Table 3-1B of Hydrology Manual)
         THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN TO CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) × 5.391
  SUBAREA RUNOFF(CFS) =
                       1.70
                      0.50 TOTAL RUNOFF(CFS) =
  TOTAL AREA(ACRES) =
 FLOW PROCESS FROM NODE 3.00 TO NODE 5.00 IS CODE = 91
 >>>>COMPUTE "V" GUTTER FLOW TRAVEL TIME THRU SUBAREA
  UPSTREAM NODE ELEVATION(FEET) = 379.30
DOWNSTREAM NODE ELEVATION(FEET) = 326.80
  CHANNEL LENGTH THRU SUBAREA (FEET) = 1750.00
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624EX100.RES
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"V" GUTTER WIDTH(FEET) = 5.80 GUTTER HIKE(FEET) = 0.050
 PAVEMENT LIP(FEET) = 0.010 MANNING'S N = .0150
 PAVEMENT CROSSFALL(DECINAL NOTATION) = 0.02000
 MAXIMUM DEPTH(FEET) = 8.58
  180 YEAR RAINFALL INTENSITY(INCH/HOUR) = 3.475
 RESIDENTIAL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .6300
 SOIL CLASSIFICATION IS "D"
 S.C.S. CURVE NUMBER (AMC II) = 89
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET)SEC.) = 4.38
AVERAGE FLOW DEPTH(FEET) = 0.22 FLOOD WIDTH(FEET) = 21.24
"V" GUTTER FLOW TRAVEL TIME(MIN.) = 6.66 Tc(MIN.) = 13.48
SUBAREA AREA(ACRES) = 7.50 SUBAREA RUNOFF(CFS) = 16.42
 AREA-AVERAGE RUNOFF COEFFICIENT = 0.630
                                     PEAK FLOW RATE(CFS) =
  TOTAL AREA(ACRES) =
                         8.0
 END OF SUBAREA "V" GUTTER HYDRAULICS:
 DEPTH(FEET) = 0.27 FLOOD WIDTH(FEET) = 26.48
 FLOW VELOCITY(FEET/SEC.) = 4.95 DEPTH*VELOCITY(FT*FT/SEC) = 1.36 LONGEST FLOWPATH FROM NODE 1.00 TO NODE 5.00 = 1820.00 FEI
                                               5.00 = 1820.00 FEET.
FLOW PROCESS FROM NODE 5.00 TO NODE 7.00 IS CODE = 61
>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<
  >>>>(STANDARD CURB SECTION USED) <<<<<
UPSTREAM ELEVATION(FEET) = 326.00 DOWNSTREAM ELEVATION(FEET) = 248.00
  STREET LENGTH(FEET) = 1125.00 CURB HEIGHT(INCHES) = 6.0
  STREET HALFWIDTH(FEET) = 16.00
  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) = 8.00
  INSIDE STREET CROSSFALL(DECIMAL) = 0.020
OUTSIDE STREET CROSSFALL(DECIMAL) = 0.020
  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 1
  STREET PARKWAY CROSSFALL(DECIMAL) = 0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) = 0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section = 0.0200
    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =
    ***STREET FLOW SPLITS OVER STREET-CROWN***
    FULL DEPTH(FEET) = 0.45 FLOOD WIDTH(FEET) = 16.00
    FULL HALF-STREET VELOCITY(FEFT/SEC.) =
                                          7.77
   SPLIT DEPTH(FEET) = 0.29 SPLIT FLOOD WIDTH(FEET) = SPLIT FLOW(CFS) = 4.39 SPLIT VELOCITY(FEET/SEC.) =
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPIH(FEET) = 0.45
    HALFSTREET FLOOD WIDTH(FEET) = 16.80
    AVERAGE FLOW VELOCITY(FEET/SEC.) = 7.77
PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) = 3.47
  STREET FLOW TRAVEL TIME(MIN.) = 2.41 Tc(MIN.) = 15.89
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 3.124
  RESIDENTIAL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .6300
  SOIL CLASSIFICATION IS "D"
  5,C.5. CURVE NUMBER (AMC II) = 89
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.630
                               SUBAREA RUNOFF(CFS) = 15.35
  SUBAREA AREA(ACRES) = 7.80
                                     PEAK FLOW RATE(CFS) =
                          15.8
  TOTAL AREA(ACRES) =
  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.45 HALFSTREET FLOOD WIDTH(FEET) = 16.00
  FLOW VELOCITY(FEET/SEC.) = 7.77 DEPTH*VELOCITY(FT*FT/SEC.) = 3.47
                              1,80 TO NODE
                                                7.00 = 2945.00 FEET.
  LONGEST FLOWPATH FROM NODE
FLOW PROCESS FROM NODE 7.00 TO NODE 9.00 IS CODE = 31
 >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<
  >>>>USING COMPUTER-ESTIMATED PIPESIZE (NOW-PRESSURE FLOW) <<<<<
 ELEVATION DATA: UPSTREAM(FEET) = 243.00 DOWNSTREAM(FEET) = 160.00
  FLOW LENGTH(FEET) = 324.08 MANNING'S N = 0.013
  DEPTH OF FLOW IN 18.6 INCH PIPE IS 10.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) = 30.02
  ESTIMATED PIPE DIAMETER(INCH) = 18.00
PIPE-FLOW(CFS) = 31.10
                                        NUMBER OF PIPES = 1
  PIPE TRAVEL TIME(MIN.) = 0.18 Tc(MIN.) = 16.07
```

624EX100.RES LONGEST PLOWPATH FROM NODE 1.00 TO NODE 9.00 = 3269.00 FEET. FLOW PROCESS FROM NODE 9.00 TO NODE 11.00 IS CODE = 53 >>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW< >>>>TRAVELTIME THRU SUBAREACCCC ELEVATION DATA: UPSIREAM(FEET) = 160.00 DOWNSTREAM(FEET) = 35.00 CHANNEL LENGTH THRU SUBARCA(FEET) = 1800.00 CHANNEL SLOPE = 0.0694 SLOPE ADJUSTMENT CURVE USED: EFFECTIVE SLOPE = .0694 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL) CHANNEL FLOW THRU SUBAREA(CFS) = 31.10
FLOW VELOCITY(FEET/SEC) = 4.64 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
TRAVEL TIME(MIN.) = 6.47 Tc(MIN.) = 22.54
LONGEST FLOWPATH FROM NODE 1.00 TO NODE 11.00 = 5069.00 FEE FLOW PROCESS FROM NODE 11.00 TO NODE 11.00 IS CODE = 81 >>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<< 100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 2.494 OAK-ASPEN-MOUNTAIN BRUSH GOOD COVER RUNOFF COEFFICIENT = .3500 SOIL CLASSIFICATION IS "D" S.C.S. CURVE NUMBER (AMC II) = 48 AREA-AVERAGE RUNOFF COEFFICIENT = 0.4612 SUBAREA AREA(ACRES) = 24.00 SUBAREA RUNOFF(CFS) = 20.95
TOTAL AREA(ACRES) = 39.8 TOTAL RUNOFF(CFS) = 45. TC(MIN.) = 22.54FLOW PROCESS FROM NODE 11.00 TO NODE 11.00 IS CODE = 81 ··· >>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<>>>> 100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 2.494 RESIDENTIAL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .6300 SOIL CLASSIFICATION IS "D' S.C.S. CURVE NUMBER (AMC II) = 89 AREA-AVERAGE RUNOFF COEFFICIENT = 0.5015 SUBAREA AREA(ACRES) = 12.50 SUBAREA RUNOFF(CFS) = 19.64
TOTAL AREA(ACRES) = 52.3 TOTAL RUNOFF(CFS) = 65.4 TOTAL AREA(ACRES) = TC(MIN.) = 22.54FLOW PROCESS FROM NODE 11.80 TO NODE 13.00 IS CODE = 52 >>>>COMPUTE NATURAL VALLEY CHANNEL FLOW< >>>>TRAVELTIME THRU SUBAREA<<<<< ELEVATION DATA: UPSTREAM(FEET) = 35.00 DOWNSTREAM(FEET) = 10.00 CHANNEL LENGTH THRU SUBAREA(FEET) = 654.00 CHANNEL SLOPE = 6.0382 CHANNEL FLOW THRU SUBAREA(CFS) = 65.40 FLOW VELOCITY(FEET/SEC) = 8.18 (PER LACFCD/RCFCRWCD HYDROLOGY MANUAL)
TRAVEL TIME(MIN.) = 1.33 TC(MIN.) = 23.88 1.80 TO NODE LONGEST FLOWPATH FROM NODE 13.00 = ******************* FLOW PROCESS FROM NODE 13.00 TO NODE 13.00 IS CODE = 10 >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<< 要本文 水壳水水 水 家 采 班 州 水 水 海 派 水 水 本 本 水 本 幸 华 本 本 李 李 本 本 华 幸 本 本 全 本 京 女 京 京 市 市 市 木 本 本 本 本 本 年 本 李 本 本 本 本 本 本 本 本 本 FLOW PROCESS FROM NODE 10.00 TO NODE 12.00 IS CODE = 21 >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS< FALLOW (BARE SOIL) POOR COVER RUNOFF COEFFICIENT # .2000 SOIL CLASSIFICATION IS "A" S.C.S. CURVE NUMBER (AMC 11) = 77 INITIAL SUBAREA FLOW-LENGTH(FEET) = UPSTREAM ELEVATION(FEET) = 115.00 DOWNSTREAM ELEVATION(FEET) = 160.00 ELEVATION DIFFERENCE(FEET) = 15.00

SUBAREA OVERLAND TIME OF FLOW(MIN.) =

6.726

WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN TO CALCULATION!

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100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.448
 SUBAREA RUNOFF(CFS) = 8.33
TOTAL AREA(ACRES) = 9.30 TOTAL RUNOFF(CFS) =
*************************
 FLOW PROCESS FROM NODE 12.00 TO NODE 13.00 IS CODE = 52
SSSSSCOMPUTE MATERAL VALLEY CHANNEL FLOWCCCC
 >>>>TRAVELTIME THRU SUBAREACCCC
#477774
 ELEVATION DATA: UPSTREAM(FEET) = 100.00 DOWNSTREAM(FEET) = 10.00 CHANNEL LENGTH THRU SUBAREA(FEET) = 800.00 CHANNEL SLOPE = 0.1125
 NOTE: CHANNEL FLOW OF 1, CFS WAS ASSUMED IN VELOCITY ESTIMATION
 NOTE: CHANNEL SLOPE OF .1 WAS ASSUMED IN VELOCITY ESTIMATION
 CHANNEL FLOW THRU SUBAREA(CFS) =
                                0.33
 TRAVEL TIME (MIN.) = 2.81 Tc(MIN.) = 9.54

LONGEST FLOWPATH FROM NODE 19.00 TO NODE 13.00 = 880.00 FEE
 FLOW PROCESS FROM NODE 13.00 TO NODE 13.00 IS CODE = 81
           >>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<>>>
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 4,343
 FALLOW (BARE SOIL) POOR COVER RUNOFF COEFFICIENT = .2000
 SOIL CLASSIFICATION IS "A"
 S.C.S. CURVE NUMBER (AMC II) = 77
 AREA-AVERAGE RUNOFF COEFFICIENT = 0.2000
 SUBAREA AREA(ACRES) = 10.60 SUBAREA RUNOFF(CFS) = 9.21
TOTAL AREA(ACRES) = 10.9 TOTAL RUNOFF(CFS) = 9.4
 TC(MIN.) # 9.54
FLOW PROCESS FROM NODE 13.00 TO NODE 13.00 IS CODE = 11
 >>>>CONFIGURACE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
** MAIN STREAM CONFLUENCE DATA **
 STREAM
       RUNDEF To INTENSITY
            (cr5) (MIN.)
9.47
           (CFS)
                          (INCH/HOUR) (ACRE)
 NUMBÉR
                           4,343
 LONGEST FLOWPATH FROM NODE 10.00 TO NODE 13.00 =
                                                    880.00 FEET.
  ** MEMORY BANK # 1 CONFLUENCE DATA **
          RUNOFF TC INTENSITY AREA
(CFS) (MIN.) (INCH/HOUR) (ACRE)
  STREAM
  NUMBER
                 23.88
            65,40
                            2.403
                                       52.30
                          1.00 TO NODE 13.00 = 5723.00 FEET.
  LONGEST FLOWPATH FROM NODE
  ** PEAK FLOW RATE TABLE **
  STREAM RUNOFF
                           INTENSITY
                   (MIN.) (INCH/HOUR)
  NUMBER
          (CFS)
                          4.343
                9.54
23.88
           35.59
     1
           70.64
                              2.403
  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) = 70.64 Tc(MIN.) = 23.88
TOTAL AREA(ACRES) = 63.2
FLOW PROCESS FROM NODE 13.00 TO NODE 14.00 IS CODE = 51
  >>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<
  >>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT) <<<<<
ELEVATION DATA: UPSTREAM(FEET) = 10.00 DOWNSTREAM(FEET) = 9.5
CHANNEL LENGTH THRU SUBAREA(FEET) = 50.00 CHANNEL SLOPE = 0.0100
CHANNEL BASE(FEET) = 10.00 "Z" FACTOR = 2.000
  MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 2.00
  180 YEAR RAINFALL INTENSITY(INCH/HOUR) = 2.392
  FALLOW (BARE SOIL) POOR COVER RUNOFF COEFFICIENT = .2000
  SOIL CLASSIFICATION IS "A"
  S.C.S. CURVE NUMBER (AMC II) = 77
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 4.83
AVERAGE FLOW DEPTH(FEET) = 1.19 TRAVEL TIME(MIN.) = 9.17
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Tc(MIN.) = 24.85
 SUBAREA AREA(ACRES) = 1.24
                             SUBAREA RUNOFF(CFS) = 0.59
 AREA-AVERAGE RUNOFF COEFFICIENT = 0.445
 TOTAL AREA(ACRES) =
                                PEAK FLOW RATE(CFS) =
                   64.4
 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) = 1.19 FLOW VELOCITY(FEET/SEC.) = 4.82
 LONGEST FLOWPATH FROM NODE
                           1.00 TO NODE
                                        14.00 =
*****************
 FLOW PROCESS FROM NODE 14.00 TO NODE 14.00 IS CODE - 81
 >>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<>>>
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 2.392
 STREETS & ROADS (CURBS/STORM DRAINS) RUNOFF COEFFICIENT = .8700
 SOIL CLASSIFICATION IS "A"
 S.C.S. CURVE NUMBER (AMC II) = 98
 AREA-AVERAGE RUNOFF COEFFICIENT = 0.4578
 SUBAREA AREA(ACRES) = 2.05 SUBAREA RUNOFF(CFS) = TOTAL AREA(ACRES) = 66.5 TOTAL RUNOFF(CFS) =
 TC(MIN.) = 24.05
***********************************
 FLOW PROCESS FROM NODE 15.00 TO NODE 17.00 IS CODE = 21
 >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<
OAK-ASPEN-MOUNTAIN BRUSH GOOD COVER RUNOFF COEFFICIENT = .3580
 SOIL CLASSIFICATION IS "D"
 S.C.S. CURVE NUMBER (AMC II) = 48
 INITIAL SUBAREA FLOW-LENGTH(FEET) = 100.00
 UPSTREAM ELEVATION(FEET) = 260.00
DOWNSTREAM ELEVATION(FEET) = 255.00
ELEVATION DIFFERENCE(FEET) = 5.20
 SUBAREA DVERLAND TIME OF FLOW(MIN.) =
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 4.906
 SUBAREA RUNOFF(CF5) ≈ 0.69
 TOTAL AREA(ACRES) #
                   0.40 TOTAL RUNOFF(CFS) #
FLOW PROCESS FROM NODE 17.00 TO NODE 19.00 IS CODE = 53
 >>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<>>>
 >>>>TRAVELTIME THRU SUBAREA<
ELEVATION DATA: UPSTREAM(FEET) = 255.00 DOWNSTREAM(FEET) = 60.00 CHANNEL LENGTH THRU SUBAREA(FEET) = 610.00 CHANNEL SLOPE = 0.3197
 SLOPE ADJUSTMENT CURVE USED:
 EFFECTIVE SLOPE = .1999 (PER LACFCD/RCFC8WCD HYDROLOGY MANUAL)
 NOTE: CHANNEL FLOW OF 1. CF5 WAS ASSUMED IN VELOCITY ESTIMATION
 CHANNEL FLOW THRU SUBAREA(CFS) = 0.69
 FLOW VELOCITY(FFET/SEC) = 2.50 (PER LACFCD/RCFCRWCD HYDROLOGY MANUAL)
TRAVEL TIME(MIN.) = 4.06 Tc(MIN.) = 11.96
  LONGEST FLOWPATH FROM NODE
                          15.00 TO NODE
                                         19.80 =
                                                   710.00 FEET.
*************
 FLOW PROCESS FROM NODE 19.88 TO NODE 19.88 IS CODE = 81
     >>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 3,754
  DAK-ASPEN-MOUNTAIN BRUSH GOOD COVER RUNDFF COEFFICIENT = .3508
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) = 48
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500
 SUBAREA AREA(ACRES) = 7.00 SUBAREA RUNOFF(CFS) = 9.20
TOTAL AREA(ACRES) = 7.4 TOTAL RUNOFF(CFS) = 9.3
  TOTAL AREA(ACRES) =
  TC(MIN.) = 11.96
FLOW PROCESS FROM NODE 19.00 TO NODE 21.00 IS CODE = 52
______
  >>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<
  >>>>TRAVELTIME THRU SUBAREA<
ELEVATION DATA: UPSTREAM(FEET) = 60.00 DOWNSTREAM(FEET) = 10.00 CHANNEL LENGTH THRU SUBAREA(FEET) = 405.00 CHANNEL SLOPE = 0.1235
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624FX100.RES

NOTE: CHANNEL SLOPE OF .1 WAS ASSUMED IN VELOCITY ESTIMATION CHANNEL FLOW THRU SUBAREA(CFS) = 9.72

FLOW VELOCITY(FEET/SEC) = 7.85 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)

TRAVEL TIME(MIN.) = 0.86 TC(MIN.) = 12.82

LONGEST FLOWPATH FROM NODE 15.00 TO NODE 21.00 = 1115.00 FEET FLOW PROCESS FROM NUDE 21.88 TO NODE 21.88 IS CODE = 81 >>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<> 108 YEAR RAINFALL INTENSITY(INCH/HOUR) = 3.589 DAK-ASPEN-MOUNTAIN BRUSH GOOD COVER RUNOFF COEFFICIENT = .2500 SOIL CLASSIFICATION IS "B" S.C.S. CURVE NUMBER (AMC II) = 30 AREA-AVERAGE RUNOFF COEFFICIENT = 0.3192 SUBAREA AREA(ACRES) = 3.30 SUBAREA RUNOFF(CFS) = TOTAL AREA(ACRES) = 10.7 TOTAL RUNOFF(CFS) = 2.96 TOTAL AREA(ACRES) = 12.26 TC(MIN.) = 12.82END OF STUDY SUMMARY: TOTAL AREA (ACRES) 10.7 TC(MIN.) = PEAK FLOW RATE(CFS) = 12.26

END OF RATIONAL METHOD ANALYSIS

RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE Reference: SAN DIEGO COUNTY FLOOD CONTROL DISTRICT 2003,1985,1981 HYDROLOGY MANUAL

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Analysis prepared by:

Urban Resource Corporation 23 Mauchiy, Suite 110 Irvine, CA 92618

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* ENCINITAS SENIOR LIVING
* EXISTING CONDITION HYDROLOGY
* 25 YEAR STORM EVENT
 FILE NAME: 624EX25,25
  TIME/DATE OF 5 FUDY: 10:45 05/31/2019
 USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
 2003 SAN DIEGO MANUAL CRITERIA
   USER SPECIFIED STORM EVENT (YEAR) = 25.00
   6-HOUR DURATION PRECIPITATION (INCHES) = 2.080
   SPECIFIED MINIMUM PIPE SIZE(INCH) = 4.00
   SPECIFIED PERCENT OF GRADIENTS (DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
   SAN DIEGO HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
   NOTE: USE MODIFIED RATIONAL METHOD PROCEDURES FOR CONFLUENCE ANALYSIS
   *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
       HALF- CROWN TO STREET-CROSSFALL: CURB GUTTER-GEOMETRIES: MANNING WIDTH CROSSFALL IN- / OUT-/PARK- HEIGHT WIDTH LIP HIKE FACTOR
NO. (FT) (FT) SIDE / SIDE/ WAY (FT) (FT) (FT) (FT) (n)
                   20.0 0.018/0.018/0.020 0.67
                                                                           2.00 0.0313 0.167 0.0150
   GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
      1. Relative Flow-Depth = 0.00 FEET
      as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
2. (Depth)*(Velocity) Constraint = 6.0 (FT*FT/S)
    *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
     OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
 FLOW PROCESS FROM NODE 1.00 TO NODE 3.00 IS CODE = 21
   >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 三百万 Table T
    RESIDENTIAL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .6300
    SOIL CLASSIFICATION IS "D"
    S.E.S. EURVE NUMBER (AMC II) = 89
    INITIAL SUBAREA FLOW-LENGTH(FEET) =
                                                              78.00
    UPSTREAM ELEVATION(FEET) = 380.00
    DOWNSTREAM ELEVATION(FEET) =
                                                379.30
    ELEVATION DIFFERENCE(FEET) =
                                                      0.76
    SUBAREA OVERLAND TIME OF FLOW(NIN.) =
    WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
                 THE MAXIMUM OVERLAND FLOW LENGTH =
                                                                         65,00
                  (Reference: Table 3-18 of Hydrology Manual)
                 THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN TO CALCULATION!
       25 YEAR RAINFALL INTENSITY(INCH/HOUR) = 4.313
    SUBAREA RUNOFF(CFS) =
                                           1.36
                                        0.50 TOTAL RUNOFF(CFS) =
    TOTAL AREA(ACRES) =
 FLOW PROCESS FROM NODE 3.00 TO NODE 5.00 IS CODE = 91
   >>>>COMPUTE "V" GUTTER FLOW TRAVEL TIME THRU SUBAREA<
  UPSTREAM NODE ELEVATION(FEET) = 379.30
DOWNSTREAM NODE ELEVATION(FEET) = 326.80
     CHANNEL LENGTH THRU SUBAREA(FEET) = 1750.08
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624EX25.RES
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"V" GUTTER WIDTH(FEET) = 5.00 GUTTER HIKE(FEET) = 0.050
 PAVEMENT LIP(FEET) = 0.010 MANNING'S N = .0150
 PAVEMENT CROSSFALL(DECIMAL NOTATION) = 0.02000
 MAXIMUM DEPTH(FEET) = 0.50
   25 YEAR RAINFALL INTENSITY(INCH/HOUR) = 2.732
 RESIDENTIAL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .6300
 SOIL CLASSIFICATION IS "D"
 S.C.S. CURVE NUMBER (AMC II) = 89
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET) = 4.15

AVERAGE FLOW DEPTH(FEET) = 0.20 FLOOD WIDTH(FEET) = 19.35

"V" GUTTER FLOW TRAVEL TIME(MIN.) = 7.03 Tc(MIN.) = 13.85

SUBAREA AREA(ACRES) = 7.50 SUBAREA RUNOFF(CFS) = 12.91
 AREA-AVERAGE RUNOFF COEFFICIENT # 0.630
 TOTAL AREA(ACRES) =
                                    PEAK FLOW RATE(CFS) w
                         8.0
 END OF SUBAREA "V" GUTTER HYDRAULICS:
 DEPTH(FEET) = 0.25 FLOOD WIDTH(FEET) = 23.99
 FLOW VELOCITY(FEET/SEC.) = 4.70 DEPTH*VELOCITY(FT*FT/SEC) = 1.18
LONGEST FLOWPATH FROM NODE 1.00 TO NODE 5.00 = 1820.00 FE
                                               5.60 = 1820.00 FEET.
FLOW PROCESS FROM NODE 5.00 TO NODE 7.00 IS CODE = 61
>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<
 >>>>(STANDARD CURB SECTION USED)<<<<<
ᆍᆓᆿᆃᆃᆃᆕᆕᆖᆕᇎᆖᇎᇎᇛᇏᇰᇓᇎᆁᆇᄙᆇᄥᇸᆇᅹᇎᇓᅅᅘᄡᅝᄦᄥᅉᄥᄦᇒᇓᄜᆒᄥᄣᄦᄥᄥᄥᄦᇶᄥᇶᅹᇎᇣᇎᇎᇎᇎᇎᇎᇎᇎᇎᇎᇎᇎᇎᇎᇎᇎᇎᇎᇎᇎᇎᇎᇎᇎᇎᇎ
 UPSTREAM ELEVATION(FEET) = 326.00 DOWNSTREAM ELEVATION(FEET) = 248.00
 STREET LENGTH(FEET) = 1125.00 CURB HEIGHT(INCHES) = 6.0
 STREET HALFWIDTH(FEET) = 16.00
 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) = 8.00
 INSIDE STREET CROSSFALL(DECIMAL) = 0.020
OUTSIDE STREET CROSSFALL(DECIMAL) = 0.020
 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNDFF = 1
 STREET PARKWAY CROSSFALL(DECIMAL) = 8.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) = 0.0150
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section = 0.0280
   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) = 0.44
   HALFSTREET FLOOD WIDTH(FEET) = 15.72
   AVERAGE FLOW VELOCITY(FEET/SEC.) = 7.65
   PRODUCT OF DEPTHAVELOCITY(FI*FT/SEC.) = 3.37
 STREET FLOW TRAVEL TIME (MIN.) # 2.45 Tc(MIN.) = 16.30
   25 YEAR RAINFALL INTENSITY(INCH/HOUR) = 2.459
  RESIDENTIAL (34.5 DU/AC OR LESS) RUNOFF COEFFICIENT - .6300
 SOIL CLASSIFICATION IS "D"
 S.C.S. CURVE NUMBER (AMC II) = 89
 AREA-AVERAGE RUNOFF COEFFICIENT . 0.638
 SUBAREA AREA(ACRES) = 7.80
                                SUBAREA RUNOFF(CFS) = 12.08
                                   PEAK FLOW RATE(CFS) =
 TOTAL AREA(ACRES) =
                         15.8
  END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.45 HALFSTREET FLOOD WIDTH(FEET) = 16.00
  FLOW VELOCITY(FEET/SEC.) = 7.77 DEPTH*VELOCITY(FT*FT/SEC.) = 3.47
  LONGEST FLOWPATH FROM NODE
                              1.00 TO NODE
                                               7.00 = 2945.00 FEEY.
FLOW PROCESS FROM NODE 7.00 TO NODE 9.00 IS CODE = 31
>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
ELEVATION DATA: UPSTREAM(FEET) = 243.00 DOWNSTREAM(FEET) = 160.00 FLCW LENGTH(FEET) = 324.00 MANNING'S N = 0.013
  DEPTH OF FLOW IN 15.0 INCH PIPE IS 10.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) = 28.81
  ESTIMATED PIPE DIAMETER (INCH) = 15.00
                                        NUMBER OF PIPES = 1
 PIPE-FLOW(CFS) = 24.48
PIPE TRAVEL TIME(MIN.) = 8.19 Tc(MIN.) = 16.49
  LONGEST FLOWPATH FROM NODE
                              1.00 TO NODE
FLOW PROCESS FROM NODE 9.86 TO NODE 11.00 IS CODE = 53
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>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<>>>>
 >>>>TRAVELTIME THRU SUBAREACCCC
ELEVATION DATA: UPSTREAM(FEET) = 160.00 DOWNSTREAM(FEET) = 35.00
 CHANNEL LENGTH THRU SUBAREA(FEET) = 1800.00 CHANNEL SLOPE = 0.0694
 SLOPE ADJUSTMENT CURVE USED:
 EFFECTIVE SLOPE = .0694 (PER LACFCD/RCFC8WCD HYDROLOGY MANUAL)
 CHANNEL FLOW THRU SUBAREA(CFS) =
                            24.48
 FLOW VELOCITY(FEET/SEC) = 4.28 (PER LACFCD/RCFC&NCD HYDROLOGY MANUAL)
TRAVEL TIME(MIN.) = 7.01 Tc(MIN.) = 23.50
                        1.00 TO NODE
 LONGEST FLOWPATH FROM NODE
                                    11.00 = 5069.00 FEET.
FLOW PROCESS FROM NODE 11.00 TO NODE 11.00 IS CODE = 81
>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<
25 YEAR RAINFALL INTENSITY(INCH/HOUR) = 1.942
 OAK-ASPEN-MOUNTAIN BRUSH GOOD COVER RUNOFF COEFFICIENT # .3500
 SOLE CLASSIFICATION IS "D"
 S.C.S. CURVE NUMBER (AMC II) = 48
AREA-AVERAGE RUNOFF COEFFICIENT = 0.4612
 SUBAREA AREA(ACRES) = 24.00 SUBAREA RUNOFF(CFS) = 15.31
TOTAL AREA(ACRES) = 39.8 TOTAL RUNOFF(CFS) = 35.0
 TOTAL AREA(ACRES) =
 TC(MIN.) = 23.50
FLOW PROCESS FROM NODE 11.00 TO NODE 11.00 IS CODE = 81
 >>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<
25 YEAR RAINFALL INTENSITY(INCH/HOUR) = 1.942
 RESIDENTIAL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .6300
 SOIL CLASSIFICATION IS "D"
 S.C.S. CURVE NUMBER (AMC II) = 89
 ARFA-AVERAGE RUNOFF COEFFICIENT = 0.5015
 SUBAREA AREA(ACRES) = 12.50 SUBAREA RUNOFF(CFS) = 15.29
TOTAL AREA(ACRES) = 52.3 TOTAL RUNOFF(CFS) = 50.
 TC(MIN.) = 23.50
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 FLOW PROCESS FROM NODE 11.00 TO NODE 13.00 IS CODE = 52
______
 >>>>COMPUTE NATURAL VALLEY CHANNEL FLOWCCCCC
  >>>>TRAVELTIME THRU SUBAREA<
ELEVATION DATA: UPSTREAM(FEET) = 35.80 DOWNSTREAM(FEET) = 654.00 CHANNEL SLOPE = 0.0382 CHANNEL FLOW THRU SUBAREA(CFS) = 50.94
 FLOW VELOCITY(FEET/SEC) = 7.61 (PER LACFCD/RCFC8WCD HYDROLOGY MANUAL)
TRAVEL TIME(MIN.) = 1.43 Tc(MIN.) = 24.93
                         1.00 TO NODE
 LONGEST FLOWPATH FROM NODE
                                     13.00 ---
                                             5723.00 FEET.
FLOW PROCESS FROM NODE 13.00 TO NODE 13.00 IS CODE = 10
 >>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
FLOW PROCESS FROM NODE 10.00 TO NODE 12.00 IS CODE = 21
>>>> RATIONAL METHOD INITIAL SUBAREA ANALYSIS<
FALLOW (BARE SOIL) POOR COVER RUNOFF COEFFICIENT = .2000
  SOIL CLASSIFICATION IS "A"
  S.C.S. CURVE NUMBER (AMC II) = 77
  INITIAL SUBAREA FLOW-LENGTH(FEET) =
                              80.00
  UPSTREAM ELEVATION(FEET) = 115.00
  DOWNSTREAM ELEVATION(FFET) = 100.00
  ELEVATION DIFFERENCE(FEET) =
                          15.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =
                               6.726
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 18.%, IS USED IN TO CALCULATION!
   25 YEAR RAINFALL INTENSITY(INCH/HOUR) = 4.352
  SUBAREA RUNOFF(CFS) = 0.26
                    0.30 TOTAL RUNOFF(CFS) =
  TOTAL AREA(ACRES) =
```

AREA-AVERAGE RUNOFF COEFFICIENT = 0.445

64.4

TOTAL AREA(ACRES) =

PEAK FLOW RATE(CFS) = 55.02

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END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) = 1.03 FLOW VELOCITY(FEET/SEC.) = 4.44
 LONGEST FLOWPATH FROM NODE
                         1.00 TO NODE
                                       14.00 m 5773.00 FEEY.
FLOW PROCESS FROM NODE 14.00 TO NODE 14.00 IS CODE = 81
 >>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOWCCCCC
25 YEAR RAINFALL INTENSITY(INCH/HOUR) = 1.860
 STREETS & ROADS (CURBS/STORM DRAINS) RUNOFF COEFFICIENT = .8700
 SOIL CLASSIFICATION IS "A"
 S.C.S. CURVE NUMBER (AMC II) = 98
 AREA-AVERAGE RUNOFF COEFFICIENT = 0.4578
 SUBAREA AREA(ACRES) = 2.05 SUBAREA RUNOFF(CFS) = TOTAL AREA(ACRES) = 66.5 TOTAL RUNOFF(CFS) =
                                              3.32
 TOTAL AREA (ACRES) -
 TC(MIN.) = 25.12
FLOW PROCESS FROM NODE 15.00 TO NODE 17.02 IS CODE = 21
>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<
OAK-ASPEN-MOUNTAIN BRUSH GOOD COVER RUNOFF COEFFICIENT = .3500
 SOIL CLASSIFICATION IS "D"
 S.C.S. CURVE NUMBER (AMC II) = 48
 INITIAL SUBAREA FLOW-LENGTH(FEET) =
                              100.02
 UPSTREAM ELEVATION(FEET) = 260.00

DOWNSTREAM ELEVATION(FEET) = 255.00

ELEVATION DIESERGE/CEET) = 260.00
 SLEVATION DIFFERENCE (FEST) =
                           5.00
 SUBAREA OVERLAND TIME OF FLOW(MIN.) =
                                 7.895
   25 YEAR RAINFALL INTENSITY(INCH/HOUR) = 3.925
 SUBAREA RUNOFF(CFS) = 0.55
TOTAL AREA(ACRES) = 0.40 TOTAL RUNOFF(CFS) =
FLOW PROCESS FROM NODE 17.00 TO NODE 19.00 IS CODE = 53
 >>>>COMPUTE NATURAL MOUNTAIN CHANNEL PLONCCCC
 >>>>TRAVELTIME THRU SUBAREACCCC
ELEVATION DATA: UPSTREAM(FEET) = 255.00 DOWNSTREAM(FEET) = 60.00
 CHANNEL LENGTH THRU SUBAREA(FEET) = 610.00 CHANNEL SLOPE = 0.3197
 SLOPE ADJUSTMENT CURVE USED:
 EFFECTIVE SLOPE = .1998 (PER LACFCD/RCFC&MCD HYDROLOGY MANUAL)
 NOTE: CHANNEL FLOW OF 1. CFS WAS ASSUMED IN VELOCITY ESTIMATION
 CHANNEL FLOW THRU SUBAREA(CFS) = 8.55
 FLOW VELOCITY(FEET/SEC) = 2.50 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
TRAVEL TIME(MIN.) = 4.06 TC(MIN.) = 11.96
 LONGEST FLOWPATH FROM NODE
                         15.00 TO NODE
                                        19.00 =
                                                  710.00 FEET.
FLOW PROCESS FROM NODE 19.00 TO NODE 19.00 IS CODE = 81
        >>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOWCCCCC
25 YEAR RAINFALL INTENSITY(INCH/HOUR) = 3.203
 OAK-ASPEN-MOUNTAIN BRUSH GOOD COVER RUNOFF COEFFICIENT = .3500
 SOIL CLASSIFICATION IS "D"
 S.C.S. CURVE NUMBER (AMC II) = 48
 AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500
 SUBAREA AREA(ACRES) = 7.00 SUBAREA RUNOFF(CFS) = TOTAL AREA(ACRES) = 7.4 TOTAL RUNOFF(CFS) =
 TC(MIN.) =
           11.96
FLOW PROCESS FROM NODE 19.00 TO NODE 21.00 IS CODE = 52
>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<>>>>
 >>>>TRAVELTIME THRU SUBAREA<
ELEVATION DATA: UPSTREAM(FEET) = 60.00 DOWNSTREAM(FEET) = 10.0
CHANNEL LENGTH THRU SUBAREA(FEET) = 405.00 CHANNEL SLOPE = 0.1235
 NOTE: CHANNEL SLOPE OF .1 WAS ASSUMED IN VELOCITY ESTIMATION
  CHANNEL FLOW THRU SUBAREA(CFS) =
                               7.78
 FLOW VELOCITY(FEET/SEC) = 7.42 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)

TRAVEL IIME(MIN.) = 0.91 Tc(MIN.) = 12.87

LONGEST FLOWPATH FROM NODE 15.00 TO NODE 21.00 = 1215.00 FEET.
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FLOW PROCESS FROM NODE 21.00 TO NODE 21.00 TS CODE = 81
 >>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<>>>>
    25 YEAR RAINFALL INTENSITY(INCH/HOUR) # 2.864
 OAK-ASPEN-MOUNTAIN BRUSH GOOD COVER RUNOFF COEFFICIENT = .2500
 SOIL CLASSIFICATION IS "B"
 S.C.S. CURVE NUMBER (AMC II) = 30
AREA-AVERAGE RUNOFF COEFFICIENT = 0.3192
 SUBAREA AREA(ACRES) = 3.30 SUBAREA RUNOFF(CFS) = TOTAL AREA(ACRES) = 18.7 TOTAL RUNOFF(CFS) =
 TC(MIN.) = 12.87
自由来来来到1918年间,在我们在我们在我们在我们在我们的自己的是我们的自己的事情,但是这个人的,但是他们的自己的自己的话,可以不是不是不是不是。
.
 END OF STUDY SUMMARY:
 TOTAL AREA(ACRES) =
PEAK FLOW RATE(CFS) =
                      10.7 TC(NIN.) =
                                     12.87
                     9.78
```

END OF RATIONAL METHOD ANALYSIS

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APPENDIX B – PROPOSED RATIONAL METHOD HYDROLOGY 25 YR, 100 YR STORM EVENT

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RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
Reference: SAN DIEGO COUNTY FLOOD CONTROL DISTRICT
2003,1985,1981 HYDROLOGY MANUAL
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Analysis prepared by:

Urban Resource Corporation 23 Mauchly, Suite 118 Irvine, CA 92618

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****************************** DESCRIPTION OF STUDY *********************
* ENCINITAS SENIOR LIVING
* PROPOSED CONDITION HYDROLOGY
* 25 YEAR STORM EVENT
 *********************
 FILE NAME: 624PR25.25
 TIME/DATE OF STUDY: 09:34 06/06/2019
 USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
 2003 SAN DIEGO MANUAL CRITERIA
 USER SPECIFIED STORM EVENT(YEAR) = 25.00
 G-HOUR DURATION PRECIPITATION (INCHES) =
                                     2.888
  SPECIFIED MINIMUM PIPE SIZE(INCH) = 4.80
  SPECIFIED PERCENT OF GRADIENTS (DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  SAN DIEGO HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: USE MODIFIED RATIONAL METHOD PROCEDURES FOR CONFLUENCE ANALYSIS
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
HALF- CROWN TO STREET-CROSSFALL: CURB GUTTER-GEOMETRIES: MANNING
WIDTH CROSSFALL IN- / OUT-/PARK- HEIGHT WIDTH LIP HIKE FACTOR
NO. (FT) (FT) SIDE / SIDE / WAY (FT) (FT) (FT) (FT) (7)
          20.0 0.018/0.018/0.020 0.67 2.00 0.0313 0.167 0.0150
 1 39.0
  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
   1. Relative Flow-Depth = 0.00 FEET
      as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)

    (Depth)*(Velocity) Constraint = 6.0 (FT*FT/S)

  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
  OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
FLOW PROCESS FROM NODE 1.00 TO NODE 3.00 IS CODE = 21
 >>>> RATIONAL METHOD INITIAL SUBARGA ANALYSIS
 RESIDENTIAL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .6300
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) = 89
  INITIAL SUBAREA FLOW-LENGTH(FEET) =
  UPSTREAM ELEVATION(FEET) = 380.00
  DOWNSTREAM ELEVATION (FEET) =
                            379.30
  ELEVATION DIFFERENCE(FEET) =
                              8.70
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =
                                    6.821
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
          THE MAXIMUM OVERLAND FLOW LENGTH =
                                         65.00
          (Reference: Table 3-1B of Hydrology Manual)
          THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN TO CALCULATION!
    25 YEAR RAINFALL INTENSITY(TNCH/HOUR) = 4.313
  SUBAREA RUNOFF(CFS) = 1.36
                      0.50 TOTAL RUNOFF(CFS) =
  TOTAL AREA(ACRES) =
 FLOW PROCESS FROM NODE 3.80 TO NODE 5.00 IS CODE = 91
  >>>>COMPUTE "V" GUTTER FLOW TRAVEL TIME THRU SUBAREACCCC
  UPSTREAM NODE ELEVATION(FEET) = 379.30
DOWNSTREAM NODE ELEVATION(FEET) = 326.60
  CHANNEL LENGTH THRU SUBAREA(FEET) = 1750.00
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"V" GUTTER WIDTH(FEET) = 5.00 GUTTER HIKE(FEET) = 0.050 PAVEMENT LIP(FEET) = 0.010 MANNING'S N = .0150
 PAVEMENT CROSSFALL(DECIMAL NOTATION) = 8.02000
 MAXIMUM DEPTH(FEET) = 0.50
   25 YEAR RAINFALL INTENSITY(INCH/HOUR) = 2.732
 RESIDENTIAL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT # .6300
 SOIL CLASSIFICATION IS "D"
 S.C.S. CURVE NUMBER (AMC II) = 89
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET) = 4.15

AVERAGE FLOW DEPTH(FEET) = 0.20 FLOOD WIDTH(FEET) = 19.35

"V" GUTTER FLOW TRAVEL TIME(MIN.) = 7.03 Tc(MIN.) = 13.85

SUBAREA AREA(ACRES) = 7.50 SUBAREA RUNOFF(CFS) = 12.91
 AREA-AVERAGE RUNOFF COEFFICIENT = 0.630
 TOTAL AREA(ACRES) -
                                     PEAK FLOW RATE(CFS) =
                         8.9
 END OF SUBAREA "V" GUTTER HYDRAULICS:
 DEPTH(FEET) = 0.25 FLOOD WIDTH(FEET) = 23.99
 FLOW VELOCITY(FEET/SEC.) = 4.70 DEPTH*VELOCITY(FT*FT/SEC) = 1.18
LONGEST FLOWPATH FROM NODE 1.00 TO NODE 5.00 = 1820.00 FE
                                                        1820.00 FEET.
FLOW PROCESS FROM NODE 5.00 TO NODE 7.00 IS CODE = 61
      >>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>> (STANDARD CURB SECTION USED) <<<<<
UPSTREAM ELEVATION(FEET) = 326.00 DOWNSTREAM ELEVATION(FEET) = 248.00
 STREET LENGTH(FEET) = 1125.00 CURB HEIGHT(INCHES) = 6.0
 STREET HALFWIDTH(FEET) = 16.00
 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) = 8.08
  INSIDE STREET CROSSFALL(DECIMAL) = 0.020
  OUTSIDE STREET CROSSFALL(DECIMAL) = 0.020
  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 1
  STREET PARKWAY CROSSFALL(DECIMAL) = 0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) = 0.8150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section = 0.0200
    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =
                                                       19.82
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) - 0.44
   HALFSTREET FLOOD WIDTH(FEET) = 15.72
    AVERAGE FLOW VELOCITY(FEET/SCC.) = 7.65
  PRODUCT OF DEPTHAVELOCITY(FT*FT/SEC.) = 3.37
STREET FLOW TRAVEL TIME(MIN.) = 2.45 Tc(MIN.) = 16.36
    25 YEAR RAINFALL INTENSITY(INCH/HOUR) = 2.459
  RESIDENTIAL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .6300
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) = 89
  AREA-AVERAGE RUNOFF COEFFICIENT # 0.630
SUBAREA AREA(ACRES) # 7.80 SUBAREA RUNOFF(CFS) # 12.08
TOTAL AREA(ACRES) # 7.80
                                    PEAK FLOW RATE(CFS) =
  TOTAL AREA(ACRES) =
  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.45 HALFSTREET FLOOD WIDTH(FEET) = 16.00
  FLOW VELOCITY(FEET/SEC.) = 7.77 DEPTH*VELOCITY(FT*FT/SEC.) = 3.47
  LONGEST FLOWPATH FROM NODE
                               1.00 TO NODE
                                                7.89 =
                                                        2945.00 FEET.
FLOW PROCESS FROM NODE 7.00 TO NODE 9.00 IS CODE = 31
 >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<
  >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
 ELEVATION DATA: UPSTREAM(FEET) = 243.80 DOWNSTREAM(FEET) = 160.00 FLOW LENGTH(FEET) = 324.00 MANNING'S N = 0.013 DEPTH OF FLOW IN 15.0 INCH PIPE IS 18.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) = 28.01
                                         NUMBER OF PIPES = 1
  ESTIMATED PIPE DIAMETER(INCH) = 15.00
  PIPE-FLOW(CFS) = 24.48
PIPE TRAVEL TIME(MIN.) = 0.19 Tc(MIN.) = 16.49
  LONGEST FLOWPATH FROM NODE
                               1.00 TO NODE
 FLOW PROCESS FROM NODE 9.00 TO NODE 11.00 IS CODE = 53
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>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<>>>
 >>>>TRAVELTIME THRU SUBAREA
ELEVATION DATA: UPSTREAM(FEET) = 160,00 DOWNSTREAM(FEET) = 35.00
 CHANNEL LENGTH THRU SUBAREA(FEET) = 1800.00 CHANNEL SLOPE = 0.0694
 SLOPE ADJUSTMENT CURVE USED:
 EFFECTIVE SLOPE = .0694 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 CHANNEL FLOW THRU SUBARGA(CFS) =
                             24,48
 FLOW VELOCITY(FEET/SEC) = 4.28 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
TRAVEL TIME(MIN.) = 7.01 Tc(MIN.) = 23.50
                          1.80 TO NODE
                                       11.00 =
 LONGEST FLOWPATH FROM NODE
                                               5069.00 FEET.
FLOW PROCESS FROM NODE 11.00 TO NODE 11.00 TS CODE = 81
 >>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<
25 YEAR RAINFALL INTENSITY(INCH/HOUR) = 1.942
 OAK-ASPEN-MOUNTAIN BRUSH GOOD COVER RUNOFF COEFFICIENT = .3500
 SOIL CLASSIFICATION IS "D"
 S.C.S. CURVE NUMBER (AMC II) = 48
 AREA-AVERAGE RUNOFF COEFFICIENT # 0.4612
 5UBAREA AREA(ACRES) = 24.00 SUBAREA RUNOFF(CFS) = 16.31
 TOTAL AREA(ACRES) =
                    39.8 TOTAL RUNOFF(CF5) =
 TC(MIN.) = 23.50
FLOW PROCESS FROM NODE 11.00 TO NODE 11.00 IS CODE = 81
>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<
25 YEAR RAINFALL INTENSITY(INCH/HOUR) = 1.942
  RESIDENTIAL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .6300
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) = 89
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.5015
  SUBAREA AREA(ACRES) = 12.50 SUBAREA RUNOFF(CFS) = 15.29
TOTAL AREA(ACRES) = 52.3 TOTAL RUNOFF(CFS) = 50.5
  TOTAL AREA(ACRES) =
  TC(MIN.) = 23.50
FLOW PROCESS FROM NODE 11.00 TO NODE 13.00 IS CODE = 31
     >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREACCCC
  >>>>USING COMPUTER-ESTEMATED PIPESIZE (NON-PRESSURE FLOW) <<<<<
<sup>노</sup>르 <mark>의료의원생복 한성도 ((성) 보고 () 에 보</mark>고 고교교교교 교급 전성 속소의로 포츠 타호 부로 <mark>포트를 조는 경</mark>소 한도 (고고 고고 고고 급하여 등부 수 등 수 수 등부 수 등 수 수 등 등 수 등
  ELEVATION DATA: UPSTREAM(FEET) = 31.00 DOWNSTREAM(FEET) = 29.00
  FLOW LENGTH(FELT) = 23.00 MANNING'S N = 0.013
DEPTH OF FLOW IN 24.0 INCH PIPE IS 16.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) = 22.40
                                   NUMBER OF PIPES = 1
  ESTIMATED PIPE DIAMETER(INCH) = 24.00
  PIPE-FLOW(CFS) = 50.94
  PIPE TRAVEL TIME(MIN.) = 0.02 Tc(MIN.) = 23.52
  LONGEST FLOWPATH FROM NODE
                                       13.00 = 5092.00 FEET.
                          1.80 TO NODE
*********************************
  FLOW PROCESS FROM NODE 13.00 TO NODE 13.00 IS CODE = 81
 >>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<><<<
 25 YEAR RAINFALL INTENSITY(INCH/HOUR) = 1.941
  FALLOW (BARE SOIL) POOR COVER RUNOFF COEFFICIENT # .2000
  SOIL CLASSIFICATION IS "A"
  S.C.S. CURVE NUMBER (AMC II) = 77
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.4862
  SUBAREA AREA(ACRES) = 2.80 SUBAREA RUNOFF(CFS) = TOTAL AREA(ACRES) = 55.1 TOTAL RUNOFF(CFS) =
  TOTAL AREA(ACRES) =
  TC(MIN.) =
            23.52
 FLOW PROCESS FROM NODE 13.00 TO NODE 15.00 IS CODE + 31
  >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<
  >>>>bsing computer-estimated pipesize (NON-pressure FLOW)<<---
 ELEVATION DATA: UPSTREAM(FEET) = 29.00 DOWNSTREAM(FEET) = 9.00
  FLOW LENGTH(FEET) = 541.00 MANNING'S N = 0.013
  DEPTH OF FLOW IN 27.8 INCH PIPE IS 20.4 INCHES
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PIPE-FLOW VELOCITY(FEET/SEC.) = 16.12
 ESTIMATED PIPE DIAMETER(INCH) = 27.00
                                  NUMBER OF PIPES = 1
 PIPE-FLOW(CFS) = 52.00
                         56 Tc(MIN.) = 24.08
1.00 TO NODE 15.00 = 5633.00 FEET.
 PIPE TRAVEL TIME(MIN.) = 0.56
 LONGEST FLOWPATH FROM NCDE
*************************
 FLOW PROCESS FROM NODE 17.00 TO NODE 19.00 IS CODE = 21
>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<
OAK-ASPEN-MOUNTAIN BRUSH GOOD COVER RUNDEF COEFFICIENT = .3500
 SOIL CLASSIFICATION IS "D"
 S.C.S. CURVE NUMBER (AMC II) = 48
 INITIAL SUBAREA FLOW-LENGTH(FEET) = 100.00
 UPSTREAM ELEVATION(FEET) = 260.00

DOWNSTREAM ELEVATION(FEET) = 255.00
 ELEVATION DIFFERENCE(FEET) =
                            5.00
 SUBAREA OVERLAND TIME OF FLOW(MIN.) =
                                 7.895
   25 YEAR RAINFALL INTENSITY(INCH/HOUR) = 3.925
 SUBAREA RUNOFF(CFS) = 0.55
 TOTAL AREA(ACRES) = 0.40 TOTAL RUNOFF(CFS) =
FLOW PROCESS FROM NODE 19,00 TO NODE 21.00 IS CODE = 53
 >>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<
 >>>>TRAVELTIME THRU SUBAREA<
ELEVATION DATA: UPSTREAM(FEET) = 255.00 DOWNSTREAM(FEET) = 46.50
 CHANNEL LENGTH THRU SUBAREA(FEET) = 703.00 CHANNEL SLOPE = 0.2966
 SLOPE ADJUSTMENT CURVE USED:
 EFFECTIVE SLOPE = .1941 (PER LAUFCD/RCFC&NCD HYDROLOGY MANUAL)
 NOTE: CHANNEL FLOW OF 1. CFS WAS ASSUMED IN VELOCITY ESTIMATION
 CHANNEL FLOW THRU SUBAREA(CFS) =
                                0.55
 FLOW VELOCITY(FEET/SEC) = 2.47 (PER LACFCD/RCFC&WCD HYDROLDGY MANUAL)
TRAVEL TIME(MIN.) = 4.75
TC(MIN.) = 12.64
                                         21.00 =
 LONGEST FLOWPATH FROM NODE
                          17.00 TO NODE
FLOW PROCESS FROM NODE 21.00 TO NODE 21.00 IS CODE = 81
>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<>>>>
25 YEAR RAINFALL INTENSITY(INCH/HOUR) = 2.897
  OAK-ASPEN-MOUNTAIN BRUSH GOOD COVER RUNOFF COEFFICIENT = .3580
  SOIL CLASSIFICATION IS "D'
  S.C.S. CURVE NUMBER (AMC II) = 48
  AREA-AVERAGE RUNOFF COEFFICIENT # 0.3580
  SUBAREA AREA(ACRES) = 5.80 SUBAREA RUNOFF(CFS) = 5.88 TOTAL AREA(ACRES) = 6.2 TOTAL RUNOFF(CFS) = 6.3
  TC(MIN.) = 12.64
FLOW PROCESS FROM NODE 21.00 TO NODE 23.00 IS CODE = 51
>>>>COMPUTE TRAPEZOTOAL CHANNEL FLONCCCC
  >>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
ELEVATION DATA: UPSTREAM(FEFT) = 46.50 DOWNSTREAM(FEET) = 14.50 CHANNEL LENGTH THRU SUBAREA(FEET) = 385.00 CHANNEL SLOPE = 0.0831 CHANNEL BASE(FEET) = 2.00 "Z" FACTOR = 1.000
  MANNING'S FACTOR = 0.015 MAXIMUM DEPTH(FEET) = 1.50
    25 YEAR RAINFALL INTENSITY(INCH/HOUR) = 2.810
  FALLOW (BARE SOIL) POOR COVER RUNOFF COEFFICIENT = .2000
  SOIL CLASSIFICATION IS "A"
  S.C.S. CURVE NUMBER (AMC II) = 77
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 10.57
  AVERAGE FLOW DEPTH(FEET) = 0.28 TRAVEL TIME(MIN.) = 0.61
  Tc(MIN.) = 13.25
                   1.40
  SUBAREA AREA(ACRES) =
                              SUBAREA RUNOFF(CFS) ≈ 0.79
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.322
                                 PEAK FLOW RATE(CFS) =
  TOTAL AREA(ACRES) =
                       7.6
  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) = 0.28 FLOW VELOCITY(FEET/SEC.) = 10.81
                          17.00 TO NODE 23.00 = 1188.00 FEET.
  LONGEST FLOWPATH FROM NODE
```

```
FLOW PROCESS FROM NODE 23.00 TO NODE 24.00 IS CODE = 31
______
 >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>USING COMPUTER-ESTIMATED PIPESIZE (NOW-PRESSURE FLOW) <<<<
<u>C=5 t d inn ned f tin to 1 compret mount name nom to 2 culture to 2 culture final f</u>
 ELEVATION DATA: UPSTREAM(FEET) = 14.50 DOWNSTREAM(FEET) = 9.10
  FLOW LENGTH(FEET) = 95.80 MANNING'S N = 0.813
  DEPTH OF FLOW IN 12.8 INCH PIPE IS 8.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) = 11.53
  ESTIMATED PIPE DIAMETER(INCH) = 12.00
                                                          NUMBER OF PIPES = 1
  PIPE-FLOW(CFS) =
                               6.89
  PIPE TRAVEL TIME(MIN.) = 0.14 Tc(MIN.) = 13.39
  LONGEST FLOWPATH FROM NODE
                                          17.00 TO NODE
                                                                                  1283.00 FEET.
FLOW PROCESS FROM NODE 24.00 TO NODE 24.00 IS CODE = 81
.......
 >>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<
25 YEAR RAINFALL INTENSITY(INCH/HOUR) = 2.792
  GENERAL COMMERCIAL RUNOFF COEFFICIENT = .8200
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) = 95
  AREA-AVERAGE RUNDFF COEFFICIENT # 0.3802
  SUBAREA AREA(ACRES) = 1.00 SUBAREA RUNOFF(CFS) = 2.29
  TOTAL AREA(ACRES) =
                                     8.6 TOTAL RUNOFF(CFS) =
  TC(MIN.) = 13.39
*************************
  FLOW PROCESS FROM NODE 25.00 TO NODE 27.00 IS CODE = 21
......
  >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<
RESIDENTIAL (7.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .4800
  SOIL CLASSIFICATION IS "A"
  S.C.S. CURVE NUMBER (AMC II) = 63
  INITIAL SUBAREA FLOW-LENGTH(FEET) = 100.08
  UPSTREAM ELEVATION(FEET) = 27.80
                                           26.60
  DOWNSTREAM ELEVATION(FEET) =
  ELEVATION DIFFERENCE(FEET) =
                                               1.20
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =
                                                        8,569
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
              THE MAXIMUM OVERLAND FLOW LENGTH = 68.00
               (Reference: Table 3-18 of Hydrology Manual)
              THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN TO CALCULATION!
     25 YEAR RAINFALL INTENSITY(INCH/HOUR) = 3.697
  SUBAREA RUNOFF(CFS) = 0.71
                                  8.40 TOTAL RUNOFF(CFS) =
  TOTAL AREA(ACRES) =
                                                                              0.71
***<del>*</del>******
  FLOW PROCESS FROM NODE 27.00 TO NODE 29.80 IS CODE = 31
   >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
   >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
ELEVATION DATA: UPSTREAM(FEET) = 23.10 DOWNSTREAM(FEET) = 22.84
  FLOW LENGTH(FEET) = 26.80 MANNING S N = 8.813
DEPTH OF FLOW IN 9.8 INCH PIPE IS 4.2 INCHES
   PIPE-FLOW VELOCITY(FEET/SEC.) = 3.47
ESTIMATED PIPE DIAMETER(INCH) = 9.00
                                                         NUMBER OF PIPES = 1
   PIPE-FLOW(CFS) = 0.71
PIPE TRAVEL TIME(MIN.) = 0.12 Tc(MIN.) =
                                                                    8.79
   LONGEST FLOWPATH FROM NODE
                                           25.00 TO NODE
                                                                    29.00 ==
FLOW PROCESS FROM NODE 29.00 TO NODE 29.00 IS CODE = 81
   >>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOWCCCCC
 25 YEAR RAINFALL INTENSITY(INCH/HOUR) = 3.663
   STREETS & ROADS (HARD SURFACE) RUNOFF COEFFICIENT = .6600
   SOIL CLASSIFICATION IS "A"
   S.C.S. CURVE NUMBER (AMC II) = 74
   AREA-AVERAGE RUNOFF COEFFICIENT = 0.5665
   SUBAREA AREA(ACRES) = 0.37 SUBAREA RUNOFF(CFS) = TOTAL AREA(ACRES) = 0.8 TOTAL RUNOFF(CFS) =
```

TC(MIN.) = 8.79

```
FLOW PROCESS FROM NODE 29.00 10 NODE 31.00 IS CODE = 31
          >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<
 >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW) <<<<<
ELEVATION DATA: UPSTREAM(FEET) = 22.84 DOWNSTREAM(FEET) = 21.44
 FLOW LENGTH(FEET) = 139.00 MANNING'S N = 0.013
DEPTH OF FLOW IN 12.0 INCH PIPE IS 5.8 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) = 4.25
 ESTIMATED PIPE DIAMETER (INCH) = 12.00
                                NUMBER OF PIPES = 1
 PIPE-FLON(CFS) = 1.60
PIPE TRAVEL TIME(MIN.) = 0.54 Tc(MIN.) =
                                      9.33
 LONGEST FLOWPATH FROM NODE
                        25.00 TO NODE
FLOW PROCESS FROM NODE 31.00 TO NODE 31.00 IS CODE = 81
 >>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<>>>
25 YEAR RAINFALL INTENSITY(INCH/HOUR) = 3.524
 RESIDENTIAL (7.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .4800
 SOIL CLASSIFICATION IS "A"
 S.C.S. CURVE NUMBER (AMC II) = 63
 AREA-AVERAGE RUNOFF COEFFICIENT # 0.5324
 SUBAREA AREA(ACRES) = 0.50 SUBAREA RUNOFF(CFS) = TOTAL AREA(ACRES) = 1.3 TOTAL RUNOFF(CFS) =
 TOTAL AREA(ACRES) =
 TC(MIN.) =
          9.33
FLOW PROCESS FROM NODE 31.00 TO NODE 33.00 IS CODE = 31
 >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREACCCC
 >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW) <<<<<
ELEVATION DATA: UPSTREAM(FEET) = 21.44 DOWNSTREAM(FEET) = 15.88
 FLOW LENGTH(FEET) = 380.00 MANNING'S N = 0.013
 DEPTH OF FLOW IN 12.0 INCH PIPE IS 6.6 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) = 5.35
 ESTIMATED PIPE DIAMETER (INCH) = 12.00
                                NUMBER OF PIPES = 1
 PIPE-FLOW(CFS) =
                 2.38
 PIPE TRAVEL TIME(MIN.) = 1.18 Tc(MIN.) = 10.51
 LONGEST FLOWPATH FROM NODE 25.00 TO NODE
                                     33.00 =
                                               645.00 FEET.
FLOW PROCESS FROM NODE 33.00 TO NODE 33.00 IS CODE = 81
 >>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<
25 YEAR RAINFALL INTENSITY(INCH/HOUR) = 3.263
 RESIDENTIAL (7.3 DU/AC OR LESS) RUNOFF COEFFICIENT - .4800
 SOIL CLASSIFICATION IS "A"
 S.C.S. CURVE NUMBER (AMC II) = 63
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.5092
 SUBAREA AREA(ACRES) = 1.01 SUBAREA RUNOFF(CFS) = 1.58
TOTAL AREA(ACRES) = 2.3 TOTAL RUNOFF(CFS) = 3.3
 TC(MIN.) = 10.51
FLOW PROCESS FROM NODE 35.00 TO NODE 37.00 IS CODE = 21
>>>> RATIONAL METHOD INITIAL SUBAREA ANALYSIS<
URBAN NEWLY GRADED AREAS RUNOFF COEFFICIENT = .6600
  SOIL CLASSIFICATION IS "A"
  S.C.S. CURVE NUMBER (AMC II) = 77
  INITIAL SUBAREA FLOW-LENGTH(FEET) = 250.00
  UPSTREAM ELEVATION(FEET) = 26.80
                         19.70
  DOWNSTREAM ELEVATION(FEET) =
  ELEVATION DIFFERENCE(FEET) =
                           7.10
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =
                                5,235
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
        THE MAXIMUM OVERLAND FLOW LENGTH = 87.60
         (Reference: Table 3-18 of Hydrology Manual)
         THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN To CALCULATION!
   25 YEAR RAINFALL INTENSITY(INCH/HOUR) - 5.116
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SUBAREA RUNOFF(CFS) =
                    1.62
                 0.48 TOTAL RUNOFF(CFS) =
 TOTAL AREA(ACRES) =
                                            1.62
FLOW PROCESS FROM NODE 37.00 TO NODE 39.00 IS CODE = 31
>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
ELEVATION DATA: UPSTREAM(FEET) = 16.20 DOWNSTREAM(FEET) = 15.70
 FLOW LENGTH(FEET) = 53.00 MANNING'S N = 0.013
 DEPTH OF FLOW IN 12.0 INCH PIPE IS 6.0 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) = 4.17
 ESTIMATED PIPE DIAMETER (INCH) = 12.00
                                NUMBER OF PIPES = 1
 PIPE-FLOW(CFS) ≈
                 1.62
 PIPE TRAVEL TIME(MIN.) = 0.21 Tc(MIN.) =
 LONGEST FLOWPATH FROM NODE
                        35.00 TO NODE
FLOW PROCESS FROM NODE 39.00 TO NODE 39.00 IS CODE = 81
 >>>>ADDITION OF SUBARFA TO MATNITHE PEAK FLOWCCCCC
TREEST STEETE BEEFF STEETE TEETE KAARTUKE PREEST EN DE SE TOT STEETE EN DE SENDE DE STRANG MEN MEN MEN DE SEND
   25 YEAR RAINFALL INTENSITY(INCH/HOUR) # 4.987
 STREETS & ROADS (HARD SURFACE) RUNDFF COEFFICIENT = .6600
 SOIL CLASSIFICATION IS "A"
 S.C.S. CURVE NUMBER (AMC II) = 74
 AREA-AVERAGE RUNOFF COEFFICIENT = 0.6600
 SUBAREA AREA(ACRES) = 0.11 SUBAREA RUNOFF(CFS) = 0.36
TOTAL RUNOFF(CFS) = 1.9
 TOTAL AREA(ACRES) =
                                              1,94
 TC(MIN.) = 5.45
FLOW PROCESS FROM NODE 39.00 TO NODE 41.00 IS CODE = 31
>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW) <<<<<
ELEVATION DATA: UPSTREAM(FEET) = 15.70 DOWNSTREAM(FEET) = 14.85
 FLOW LENGTH(FEET) = 100.00 MANNING'S N = 0.013
 DEPTH OF FLOW IN 12.0 INCH PIPE IS 6.9 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) = 4.18
 ESTIMATED PIPE DIAMETER(INCH) = 12.00
                                 NUMBER OF PIPES = 1
 PIPE-FLOW(CFS) =
                 1.94
 PIPE TRAVEL TIME(MIN.) = 0.40
                                     5.85
                           Tc(MIN.) =
 LONGEST FLOWPATH FROM NODE
                         35.20 TO NODE
                                                483.00 FEET.
                                       41.00 =
***************
 FLOW PROCESS FROM NODE 41.00 TO NODE 41.00 IS CODE = 81
 >>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<
*****************
   25 YEAR RAINFALL INTENSITY(INCH/HOUR) = 4.764
  STREETS & ROADS (HARD SURFACE) RUNOFF COEFFICIENT = .6600
  SOIL CLASSIFICATION IS "A"
  S.C.S. CURVE NUMBER (AMC II) = 74
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.6600
  SUBAREA AREA(ACRES) = 1.25 SUBAREA RUNOFF(CFS) = 3.93
TOTAL AREA(ACRES) = 1.8 TOTAL RUNOFF(CFS) = 5.
 TC(MIN.) = 5.85
FLOW PROCESS FROM NODE 41.00 TO NODE 43.00 IS CODE = 31
>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>using computer-estimated pipesize (NON-PRESsure FLOW)<<<<<
ELEVATION DATA: UPSTREAM(FEET) = 14.85 DOWNSTREAM(FEET) = 14.50
  FLOW LENGTH(FEET) = 36.00 MANNING'S N = 0.013
  DEPTH OF FLOW IN 15.0 INCH PIPE IS 11.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) = 5.60
  ESTIMATED PIPE DIAMETER (INCH) = 15.08
                                 NUMBER OF PIPES = 1
  PIPE-FLOW(CFS) = 5.79
PIPE TRAVEL TIME(MIN.) = 0.11 Tc(MIN.) = 5.95
LONGEST PLOWPATH FROM NODE 35.00 TO NODE 43.00 =
                                                439.00 FEET.
  FLOW PROCESS FROM NODE 43.00 TO NODE 43.00 IS CODE = 83
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>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<
 25 YEAR RAINFALL INTENSITY(INCH/HOUR) = 4.789
 RESIDENTIAL (7.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .4800
 SOIL CLASSIFICATION IS "A"
 S.C.S. CURVE NUMBER (AMC II) = 63
 AREA-AVERAGE RUNOFF COEFFICIENT = 8.5774
 SUBAREA AREA(ACRES) = 1.56 SUBAREA RUNOFF(CFS) = TOTAL AREA(ACRES) = 3.4 TOTAL RUNOFF(CFS) =
                                          3.53
           5.95
 TC(MIN.) =
******
 FLOW PROCESS FROM NODE 43.00 TO NODE 43.00 IS CODE = 81
 >>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
25 YEAR RAINFALL INTENSITY(INCH/HOUR) = 4.709
 RESIDENTIAL (7.3 DU/AC OR LESS) RUNOFF COEFFICIENT # .4800 SOIL CLASSIFICATION IS "A"
 S.C.S. CURVE NUMBER (AMC II) = 63
 AREA-AVERAGE RUNOFF COEFFICIENT = 0.5656
 SUBAREA AREA(ACRES) = 0.47 SUBAREA RUNOFF(CFS) = 1.06
                  3.9 TOTAL RUNOFF(CFS) =
 TOTAL AREA(ACRES) =
 TC(MIN.) = 5.95
FLOW PROCESS FROM NODE 45.00 TO NODE 47.00 IS CODE = 21
>>>>RATIONAL METHOD INITIAL SUBARFA ANALYSIS<
 RESIDENTIAL (7.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .4800
 SOIL CLASSIFICATION IS "A"
 S.C.S. CURVE NUMBER (AMC II) = 63
 INITIAL SUBAREA FLOW-LENGTH(FEET) =
                             170.00
 UPSTREAM ELEVATION(FEET) = 16.10
                        14.20
 DOWNSTREAM ELEVATION(FEET) =
 ELEVATION DIFFERENCE(FECT) =
                          1.98
 SUBAREA OVERLAND TIME OF FLOW(MIN.) =
                               8.787
 WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
        THE MAXIMUM OVERLAND FLOW LENGTH = 66.76
        (Reference: Table 3-1B of Hydrology Manual)
        THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN TO CALCULATION!
   25 YEAR RAINFALL INTENSITY(INCH/HOUR) = 3.663
 SUBAREA RUNOFF(CFS) = 0.86
 TOTAL AREA(ACRES) =
                   0.49 TOTAL RUNOFF(CFS) =
FLOW PROCESS FROM NODE 47.00 TO NODE 49.00 IS CODE = 31
>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA
  >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
ELEVATION DATA: UPSTREAM(FEET) # 11.70 DOWNSTREAM(FEET) # 10.85
  FLOW LENGTH(FEET) = 168.00 MANNING'S N = 0.013
  DEPTH OF FLOW IN 9.0 INCH PIPE IS 5.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) = 2.79
ESTIMATED PIPE DIAMETER(INCH) = 9.00
  PIPE TRAVEL TIME(MIN.) = 1.80 TC(MIN.) = LONGEST FLOWPATH FROM NODE 45.00 TO MODE
                                NUMBER OF PIPES = 1
                                     9.79
                                              338.80 FEET.
FLOW PROCESS FROM NODE 49.00 TO NODE 49.00 IS CODE = 81
     >>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<>>>>
 25 YEAR RAINFALL INTENSITY(INCH/HOUR) = 3.416
  RESIDENTIAL (7.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .4800
  SOIL CLASSIFICATION IS "A"
  S.C.S. CURVE NUMBER (AMC II) = 63
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.4800
  SUBAREA AREA(ACRES) = 0.27 SUBAREA RUNOFF(CFS) = 0.44
TOTAL AREA(ACRES) = 0.8 TOTAL RUNOFF(CFS) = 1.7
  TOTAL AREA(ACRES) =
  TC(MIN.) = 9.79
 本秋本华大都有《李老德中书》次文文本教的写明本来永兴在教堂自然外刊进兴会公布大李大本本本本学自士李大李大本大本大本大本大李大李大李大李大李大李
  FLOW PROCESS FROM NODE 49.00 TO NODE 51.00 IS CODE = 31
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>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
********
 ELEVATION DATA: UPSTREAM(FEET) = 10.85 DOWNSTREAM(FEET) = 10.00
 FLOW LENGTH(FEET) = 170.00 MANNING'S N = 8.013
 DEPTH OF FLOW IN 12.0 INCH PIPE IS 6.2 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) = 3.07
 ESTIMATED PIPE DIAMETER(INCH) = 12.00
                                  NUMBER OF PIPES = 1
 PIPE-FLOW(CFS) = 1.25
PIPE TRAVEL TIME(MIN.) = 0.92 Tc(MIN.) = 10.71
 PIPE-FLOW(CFS) =
 LONGEST FLOWPATH FROM NODE
                         45.00 TO NODE
                                                 508,00 FEET.
FLOW PROCESS FROM NODE 51.00 TO NODE 53.00 IS CODE = 51
 >>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<
 >>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT) <<<<
ELEVATION DATA: UPSTREAM(FEET) = 10.00 DOWNSTREAM(FEET) = 9.00 CHANNEL LENGTH THRU SUBAREA(FEET) = 135.00 CHANNEL SLOPE = 0.0074 CHANNEL BASE(FEET) = 10.00 "Z" FACTOR = 50.000
 MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) =
   25 YEAR RAINFALL INTENSITY(INCH/HOUR) = 2.838
 RESIDENTIAL (7.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .4800
 SOIL CLASSIFICATION IS "A"
 S.C.S. CURVE NUMBER (AMC II) = 63
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 8.96
AVERAGE FLOW DEPTH(FEET) = 8.16 TRAVEL TIME(MIN.) = 2.34
 Tc(MIN.) = 13.05
 SUBAREA AREA(ACRES) = 2.06
                            SUBAREA RUNOFF(CFS) = 2.81
 AREA-AVERAGE RUNOFF COEFFICIENT = 0.480
                              PEAK FLOW RATE(CF5) =
 TOTAL AREA(ACRES) =
 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) = 0.19 FLOW VELOCITY(FEET/SEC.) = 1.07
 LONGEST FLOWPATH FROM NODE
                         45,80 TO NODE 53.08 #
FLOW PROCESS FROM NODE 53.00 TO NODE 53.00 IS CODE = 81
>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<
<del>^</del>
   25 YEAR RAINFALL INTENSITY(INCH/HOUR) = 2.838
  STREETS & ROADS (HARD SURFACE) RUNOFF COEFFICIENT = .6600
  SOIL CLASSIFICATION IS "A"
  S.C.S. CURVE NUMBER (AMC II) = 74
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.5278
 SUBAREA AREA(ACRES) = 1.82 SUBAREA RUNOFF(CFS) = 1.91
TOTAL AREA(ACRES) = 3.8 TOTAL RUNOFF(CFS) = 5.3
  TC(MIN.) = 13.05
FLOW PROCESS FROM NODE 55.00 TO NODE 56.00 IS CODE = 21
 >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<
GENERAL COMMERCIAL RUNOFF COEFFICIENT = .8200
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) = 95
  INITIAL SUBARRA FLOW-LENGTH(FEET) =
                                50.00
  UPSTREAM ELEVATION(FEET) = 11.24
  DOWNSTREAM ELEVATION(FEET) = 11.15
ELEVATION DIFFERENCE(FEET) = 0.09
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =
                                 4.498
  WARNING: THE MINIMUM OVERLAND FLOW SLOPE, 0.5%, IS USED IN TO CALCULATION!
   25 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.269
  NOTE: RAINFALL INTENSITY IS BASED ON TO = 5-MINUTE.
  SUBAREA RUNOFF(CFS) = 0.43
                     0.10 TOTAL RUNOFF(CFS) =
  TOTAL AREA(ACRES) =
FLOW PROCESS FROM NODE 56.00 TO NODE 57.00 IS CODE = 61
       >>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA
  >>>>(STANDARD CURB SECTION USED)<<<<<
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UPSTREAM ELEVATION(FEET) = 11.15 DOWNSTREAM ELEVATION(FEET) = 10.24
 STREET LENGTH(FEET) = 300.00 CURB HEIGHT(INCHES) = 8.0 STREET HALFWIDTH(FEET) = 30.00
 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) = 28.00
 INSIDE STREET CROSSFALL(DECIMAL) = 0.020
 OUTSIDE STREET CROSSFALL(DECIMAL) = 0.820
 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 1
 STREET PARKWAY CROSSFALL(DECIMAL) = 0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) = 0.0150
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section = 8.0200
   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) = 0.43
   HALFSTREET FLOOD WIDTH(FEET) = 13.63
   AVERAGE FLOW VELOCITY(FEET/SEC.) = 1.50
 PRODUCT OF DEPTHSVELOCITY(FT*FT/SEC.) = 0.65
STREET FLOW TRAVEL TIME(MIN.) = 3.32 Tc(MIN.) = 7.81
   25 YEAR RAINFALL INTENSITY(INCH/HOUR) = 3.951
  GENERAL COMMERCIAL RUNOFF COEFFICIENT = .8208
 SOIL CLASSIFICATION IS "D"
 S.C.S. CURVE NUMBER (AMC II) = 95
  AREA-AVERAGE RUNOFF COEFFICIENY = 0.820
  SUBAREA AREA(ACRES) = 1.61
                                  SUBAREA RUNOFF(CFS) =
  TOTAL AREA(ACRES) =
                                    PEAK FLOW RATE(CFS) =
  END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.51 HALFSTREET FLOOD WIDTH(FEET) = 17.38
  FLOW VELOCITY(FEET/SEC.) = 1.73 DEPTH*VELOCITY(FT*FT/SEC.) = 0.87
  LONGEST FLOWPATH FROM NODE 55.00 TO NODE 57.00 = 350.00 FEET.
FLOW PROCESS FROM NODE 59.00 TO NODE 69.00 IS CODE = 21
 >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<
GENERAL COMMERCIAL RUNGER COEFFICIENT = .8200
  SOIL CLASSIFICATION IS "O"
  5.C.S. CURVE NUMBER (AMC II) = 95
  INITIAL SUBAREA FLOW-LENGTH(FEET) =
 UPSTREAM ELEVATION(FEET) = 12.50
DOWNSTREAM ELEVATION(FEET) = 12.40
ELEVATION DIFFERENCE(FEET) = 0.10
                                 0.10
  SUBAREA OVERLAND TIME OF FLOW(MIN.) -
                                       4.490
  WARNING: THE MINIMUM OVERLAND FLOW SLOPE, 0.5%, IS USED IN TO CALCULATION!
   25 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.269
  NOTE: RAINFALL INTENSITY IS BASED ON To = 5-MINUTE.
 SUBAREA RUNOFF(CFS) = 0.22
TOTAL AREA(ACRES) = 0.85 TOTAL RUNOFF(CFS) =
FLOW PROCESS FROM NODE 60.00 TO NODE 61.00 IS CODE = 61
  >>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>(STANDARD CURB SECTION USED)<<<<<
UPSTREAM ELEVATION(FEET) = 12.40 DOWNSTREAM ELEVATION(FEET) = 11.25
  STREET LENGTH(FEET) = 310.00 CURB HEIGHT(INCHES) = 8.0
STREET HALFNIDTH(FEET) = 30.00
  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) = 20.00
  INSIDE STREET CROSSFALL(DECIMAL) = 0.020
  OUTSIDE STREET CROSSFALL(DECIMAL) = 0.020
  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 1
  STREET PARKWAY CROSSFALL(DECIMAL) = 0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) = 0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section = 0.0200
    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =
                                                         1.04
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) # 0.32
    HALFSTREET FLOOD WIDTH(FEET) =
    AVERAGE FLOW VELOCITY(FEET/SEC.) = 1.28
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) = 0.40
STREET FLOW TRAVEL TIME(MIN.) = 4.04 TC(MIN.) =
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25 YEAR RAINFALL INTENSITY(INCH/HOUR) = 3.733
GENERAL COMMERCIAL RUNDFF COEFFICIENT = .8200
SOIL CLASSIFICATION IS "D"

S.C.S. CURVE NUMBER (AMC II) = 95
AREA-AVERAGE RUNDFF COEFFICIENT = 0.820
SUBAREA AREA(ACRES) = 0.53 SUBAREA RUNOFF(CFS) = 1.62
TOTAL AREA(ACRES) = 0.6 PEAK FLOW RATE(CFS) = 1.78

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 0.36 HALFSTREET FLOOD WIDTH(FEET) = 10.20
FLOW VELOCITY(FEET/SEC.) = 1.44 DEPTH-VELOCITY(FT*FT/SEC.) = 0.52
LONGEST FLOWPATH FROM NODE 59.00 TO NODE 61.00 = 360.00 FEET.

END OF STUDY SUMMARY:
TOTAL AREA(ACRES) = 0.6 TC(MIN.) = 8.53
PEAK FLOW RATE(CFS) = 1.78
```

END OF RATIONAL METHOD ANALYSIS

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RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE Reference: SAN DIEGO COUNTY FLOOD CONTROL DISTRICT 2003,1985,1981 HYDROLOGY MANUAL

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Analysis prepared by:

Urban Resource Corporation 23 Mauchly, Suite 110 Irvine, CA 92618

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* ENCINITAS SENIOR LIVING
 PROPOSED CONDITION HYDROLOGY
 100 YEAR STORM EVENT
 FILE NAME: 624PR100.100
 TIME/DATE OF STUDY: 09:36 06/06/2019
 USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
 2003 SAN DIEGO MANUAL CRITERIA
 USER SPECIFIED STORM EVENT(YEAR) = 100.00
 6-HOUR DURATION PRECIPITATION (INCHES) = 2.500
  SPECIFIED MINIMUM PIPE SIZE(INCH) # 4.08
 SPECIFIED PERCENT OF GRADIENTS (DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
 SAN DIEGO HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
 NOTE: USE MODIFIED RATIONAL METHOD PROCEDURES FOR CONFLUENCE ANALYSIS
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
    HALF- CROWN TO STREET-CROSSFALL: CURB GUTTER-GEOMETRIES: MANNING
WIDTH CROSSFALL IN- / OUT-/PARK- HEIGHT WIDTH LIP HIKE FACTOR
NO. (FT) (FT) SIDE / SIDE / WAY (FT) (FT) (FT) (T)
 1 30.0
          20.0 0.018/0.018/0.020 0.67 2.00 0.0313 0.167 0.0150
  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
   1. Relative Flow-Depth = 0.00 FEET
     as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
   2. (Depth)*(Velocity) Constraint = 6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
  OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
FLOW PROCESS FROM NODE 1.00 TO NODE 3.00 IS CODE = 21
>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<
RESIDENTIAL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .6300
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) = 89
  INITIAL SUBAREA FLOW-LENGTH(FEET) =
                                70.00
  UPSTREAM ELEVATION(FEET) = 380.00
DOWNSTREAM ELEVATION(FEET) = 379.3
                          379.30
  ELEVATION DIFFERENCE (FEET) -
                            0.70
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =
                                  6.821
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
         THE MAXIMUM OVERLAND FLOW LENGTH =
                                       65.00
         (Reference: Table 3-18 of Hydrology Manual)
         THE MAXIMUM OVERLAND FLOW LINGTH IS USED IN TO CALCULATION!
  120 YEAR RAIMMALL SUBAREA RUNOFF(CFS) =
   180 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.391
                      1.70
  TOTAL AREA(ACRES) =
                     0.50 TOTAL RUNOFF(CFS) =
 FLOW PROCESS FROM NODE 3.00 TO NODE 5.00 IS CODE = 91
 >>>>COMPUTE "V" GUTTER FLOW TRAVEL TIME THRU SUBAREA<
 UPSTREAM NODE ELEVATION(FEET) = 379.30
DOWNSTREAM NODE ELEVATION(FEET) = 326.00
  CHANNEL LENGTH THRU SUBAREA(FEET) = 1750.00
```

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"V" GUTTER WIDTH(FEET) = 5.00 GUTTER HIKE(FEET) = 0.050
  PAVEMENT LIP(FEET) = 0.010 MANNING'S N = .0150
  PAVEMENT CROSSFALL (DECIMAL NOTATION) = 0.02000
  MAXIMUM DEPTH(FEET) = 0.50
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 3.475
  RESIDENTIAL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .6380
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) = 89
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 4.38

AVERAGE FLOW DEPTH(FEET) = 0.22 FLOOD WIDTH(FEET) = 21.24

"V" GUTTER FLOW TRAVEL TIME(MIN.) = 6.66 Tc(MIN.) = 13.48
  SUBAREA AREA(ACRES) = 7.50 SUBAREA RUNOFF(CFS) = 16.42
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.630
                                                             PEAK FLOW RATE(CFS) =
  TOTAL AREA(ACRES) =
                                          8.0
  END OF SUBAREA "V" GUTTER HYDRAULICS:
  DEPTH(FEET) = 0.27 FLOOD WIDTH(FEET) = 26.40
  FLOW VELOCITY(FEET/SEC.) = 4.95 DEPTH*VELOCITY(FT*FT/SEC) = 1.36
LONGEST FLOWPATH FROM NODE 1.00 TO NODE 5.00 = 1820.00 FEE
                                                                               5.00 = 1820.08 FEET.
FLOW PROCESS FROM NODE 5.00 TO NODE 7.00 IS CODE = 61
________
   >>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<
  >>>>(STANDARD CURB SECTION USED)<<<<<
三型型 (1) 三型 (1
  UPSTREAM ELEVATION(FEET) = 326.00 DOWNSTREAM ELEVATION(FEET) = 248.00
  STREET LENGTH(FEET) = 1125.80 CURB HEIGHT(INCHES) = 6.0
  STREET HALFWIDTH(FEET) = 16.88
   DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) = 8.00
   INSIDE STREET CROSSFALL(DECIMAL) = 0.020
   OUTSIDE STREET CROSSFALL(DECIMAL) = 0.020
   SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 1
   STREET PARKWAY CROSSFALL(DECIMAL) = 0.020
   Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) = 0.0150
   Manning's FRICTION FACTOR for Back-of-Walk Flow Section = 0.0200
      **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) ==
      ***STREET FLOW SPLITS OVER STREET-CROWN***
      FULL DEPTH(FEET) = 0.45 FLOOD WIDTH(FEET) = 16.00
      FULL HALF-STREET VELOCITY(FEET/SEC.) = 7.77
      SPLIT DEPTH(FEET) = 8.29 SPLIT FLOOD WIDTH(FEET) = SPLIT FLOW(CFS) = 4.39 SPLIT VELOCITY(FEET/SEC.) =
      STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
      STREET FLOW DEPTH(FEET) = 0.45
      HALFSTREET FLOOD WIDTH(FEET) = 16.00
      AVERAGE FLOW VELOCITY(FEET/SEC.) = 7.77
PRODUCT DF DEPTHSVELOCITY(FT*FT/SEC.) = 3.47
   STREET FLOW TRAVEL TIME(MIN.) = 2.41 Tc(MIN.) = 15.89
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 3.124
RESIDENTIAL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .6300
    SOIL CLASSIFICATION IS "D"
   5.C.S. CURVE NUMBER (AAC II) = 89
    AREA-AVERAGE RUNOFF COEFFICIENT = 0.630
   SUBAREA AREA(ACRES) = 7.80 SUBAREA RUNOFF(CF5) = 15.35
    TOTAL AREA(ACRES) =
                                          15.8
                                                             PEAK FLOW RATE(CFS) =
    END OF SUBAREA STREET FLOW HYDRAULICS:
    DEPTH(FEET) = 0.45 HALFSTREET FLOOD WIDTH(FEET) = 16.00
   FLOW VELOCITY(FEET/SEC.) = 7.77 DEPTH*VELOCITY(FT*FT/SEC.) = LONGEST FLOWPATH FROM NODE 1.00 TO NODE 7.00 = 2945.
                                                                                7.00 = 2945.00 FEET.
FLOW PROCESS FROM NODE 7.80 TO NODE 9.00 IS CODE = 31
 >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
    >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
 ELEVATION DATA: UPSTREAM(FEET) = 243.00 DOWNSTREAM(FEET) = 168.00
    FLOW LENGTH(FEET) = 324.00 MANNING'S N = 0.013
    DEPTH OF FLOW IN 18.0 INCH PIPE IS 10.2 INCHES
    PIPE-FLOW VELOCITY(FEET/SEC.) = 30.02
    ESTIMATED PIPE DIAMETER(INCH) = 18.00
PIPE-FLOW(CFS) = 31.10
                                                                  NUMBER OF PIPES = 1
    PIPE TRAVEL TIME(MIN.) = 0.18 Tc(MIN.) = 16.07
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624PR100.RES LONGEST FLOWPATH FROM NODE 1.00 TO NODE 9.00 = 3269.80 FEET. FLOW PROCESS FROM NODE 9.00 TO NODE 11.00 IS CODE = 53 >>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOWCCCC >>>>TRAVELTIME THRU SUBAREACCCC ELEVATION DATA: UPSTREAM(FEET) = 160.00 DOWNSTREAM(FEET) = 35.00 CHANNEL LENGTH THRU SUBAREA(FEET) = 1800.00 CHANNEL SLOPE = 0.0694 SLOPE ADJUSTMENT CURVE USED: EFFECTIVE SLOPE = .0694 (PER LACFCD/RCFC8WCD HYDROLOGY MANUAL) CHANNEL FLOW THRU SUBAREA(CFS) = 31.10 FLOW VELOCITY(FEET/SEC) = 4.64 (PER LACFCD/RCFC8WCD HYDROLOGY MANUAL)
TRAVEL TIME(MIN.) = 6.47 Tc(MIN.) = 22.54
LONGEST FLOWPATH FROM NODE 1.00 TO NODE 11.00 = 5069.00 FEE ***************** FLOW PROCESS FROM NODE 11.00 TO NODE 11.00 IS CODE = 81 >>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<< 180 YEAR RAINFALL INTENSITY(INCH/HOUR) = 2.494 OAK-ASPEN-MOUNTAIN BRUSH GOOD COVER RUNOFF COEFFICIENT = .3500 SOIL CLASSIFICATION IS "D" S.C.S. CURVE NUMBER (AMC II) = 48 AREA-AVERAGE RUNOFF COEFFICIENT = 0.4612 SUBAREA AREA(ACRES) = 24.00 SUBAREA RUNOFF(CFS) = 20.95
TOTAL AREA(ACRES) = 39.8 TOTAL RUNOFF(CFS) = 45. TOTAL AREA(ACRES) = TC(MIN.) = 22.54FLOW PROCESS FROM NODE 11.00 TO NODE 11.00 IS CODE = 81 >>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW< 100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 2.494 RESIDENTIAL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .6300 SOIL CLASSIFICATION IS "D" S.C.S. CURVE NUMBER (AMC II) = 89 AREA-AVERAGE RUNOFF COEFFICIENT = 8.5015 SUBAREA AREA(ACRES) = 12.50 SUBAREA RUNOFF(CFS) = 19.64 TOTAL AREA(ACRES) = 52.3 TOTAL RUNOFF(CFS) = 65.4 TOTAL AREA(ACRES) = TC(MEN.) = 22.54FLOW PROCESS FROM NODE 11.00 TO NODE 13.00 IS CODE - 31 >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA< >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW) <<<< ELEVATION DATA: UPSTREAM(FEET) = 31.00 DOWNSTREAM(FEET) = 29.00 FLOW LENGTH(FEET) = 23.00 MANNING'S N = 0.013 DEPTH OF FLOW IN 27.0 INCH PIPE IS 17.5 INCHES PIPE-FLOW VELOCITY(FEET/SEC.) = 23.94 ESTIMATED PIPE DIAMETER(INCH) = 27.00 NUMBER OF PIPES = 1 PIPE-FLOW(CFS) = 65.40 PIPE TRAVEL TIME(MIN.) = 0.02 Tc(MIN.) = 22.56 LONGEST FLOWPATH FROM NODE 1.00 TO NODE 13.00 = 5092.00 FEET. FLOW PROCESS FROM NODE 13.00 TO NODE 13.00 IS CODE = 81 >>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<>>> 100 YEAR RAINFALL INTENSITY(INCH/HOUR) # 2.492 FALLOW (BARE SOIL) POOR COVER RUNOFF COEFFICIENT = .2000 SOIL CLASSIFICATION IS "A" S.C.S. CURVE NUMBER (AMC II) = 77 AREA-AVERAGE RUNOFF COEFFICIENT = 0.4862 SUBAREA AREA(ACRES) = 2.80 SUBAREA RUNOFF(CFS) = 1.40 FOTAL AREA(ACRES) = 55.1 TOTAL RUNOFF(CFS) = 66.7 TC(MIN.) = 22.56FLOW PROCESS FROM NODE 13.00 TO NODE 15.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<

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>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<
ELEVATION DATA: UPSTREAM(FEET) = 29.00 DOWNSTREAM(FEET) = 9.00
 FLOW LENGTH(FEET) = 541.00 MANNING'S N = 0.013
 DEPTH OF FLOW IN 30.0 INCH PIPE IS 22.1 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) = 17.23
 ESTIMATED PIPE DIAMETER(INCH) = 30.00
                                   NUMBER OF PIPES = 1
 PIPE-FLOW(CFS) = 66.77
 PIPE TRAVEL TIME(MIN.) = 0.52 Tc(MIN.) = 23.08
 LONGEST FLOWPATH FROM NODE
                          1.00 TO NODE
                                        15.00 = 5633.00 FEET.
FLOW PROCESS FROM NODE 17.00 TO NODE 19.00 IS CODE = 21
>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<
ㅁ칟쯨싞녆궣퍞퍞뎔펻킞<u>쿅픋퍞늗퍞</u>륟믇륟댬퍞퍞늗퍞퍞픋픋퍞퍞퍞퍞퍞퍞퍞퍞퍞쯗퍞냋홵롃퐴뼚궠훘븒흊뚌홶X뚌홿坐퍞첧X뚕롃괡뿨찞꺯뱮덿됋뚔뿄첉焦뿂w뚌
 OAK-ASPEN-MOUNTAIN BRUSH GOOD COVER RUNOFF COEFFICIENT = .3500
 SOIL CLASSIFICATION IS "D"
 S.C.S. CURVE NUMBER (ANC II) = 48
 INITIAL SUBAREA FLOW-LENGTH(FEET) = 100.00
 UPSTREAM ELEVATION(FEET) = 268.08
 DOWNSTREAM ELEVATION(FEET) = 255.00
 ELEVATION DIFFERENCE(FEET) =
                            5.00
 SUBAREA OVERLAND TIME OF FLOW(MIN.) = 7.895
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 4.906
 SUBAREA RUNOFF(CFS) = 0.69
                      0.40 TOTAL RUNOFF(CFS) =
 TOTAL AREA(ACRES) =
FLOW PROCESS FROM NODE 19.00 TO NODE 21.00 IS CODE = 53
>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOWCCCC
  >>>>TRAVELTIME THRU SUBAREA
ELEVATION DATA: UPSTREAM(FEET) = 255.00 DOWNSTREAM(FEET) = 46.50
  CHANNEL LENGTH THRU SUBAREA(FEET) = 703.00 CHANNEL SLOPE = 0.2966
  SLOPE ADJUSTMENT CURVE USED:
  EFFECTIVE SLOPE = .1941 (PER LACFCD/RCFC&WCD HYDROLOGY MANNAL)
  NOTE: CHANNEL FLOW OF 1. CFS WAS ASSUMED IN VELOCITY ESTIMATION
 CHANNEL FLOW THRU SUBAREA(CFS) = 0.69
 FLOW VELOCITY(FEET/SEC) = 2.47 (PER LACFCD/RCFCRWCD HYDROLOGY MANUAL)
TRAVEL TIME(MIN.) = 4.75 Tc(MIN.) = 12.64
  LONGEST FLOWPATH FROM NODE
                          17.08 TO NODE
                                         21.88 =
FLOW PROCESS FROM NODE 21.00 TO NODE 21.00 IS CODE = 81
 >>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 3.621
  OAK-ASPEN-MOUNTAIN BRUSH GOOD COVER RUNOFF CDEFFICIENT = .3500
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) = 48
  AREA-AVERAGE RUMOFF COEFFICIENT = 0.3500
  SUBAREA AREA(ACRES) = 5.80 SUBAREA RUNOFF(CFS) = 7.35
TOTAL AREA(ACRES) = 6.2 TOTAL RUNOFF(CFS) = 7.3
  TC(MIN.) = 12.64
FLOW PROCESS FROM NODE 21.00 TO NODE 23.00 IS CODE = 51
 >>>> COMPUTE TRAPEZOIDAL CHANNEL FLOW<
  >>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT) <<<<<
 ELEVATION DATA: UPSTREAM(FEET) = 46.50 DOWNSTREAM(FEET) = 14.50 CHANNEL LENGTH THRU SUBAREA(FEET) = 385.00 CHANNEL SLOPE = 0.0831 CHANNEL BASE(FEET) = 2.00 "Z" FACTOR = 1.000
  MANNING'S FACTOR = 8.015 MAXIMUM DEPTH(FEET) =
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 3.521
  FALLOW (BARE SOIL) POOR COVER RUNOFF COEFFICIENT # .2008
  SOIL CLASSIFICATION IS "A"
  S.C.S. CURVE NUMBER (AMC II) = 77
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 11.42
AVERAGE FLOW DEPTH(FEET) = 0.32 TRAVEL TIME(MIN.) = 0.56
  Tc(MIN.) = 13,21
  SUBAREA AREA(ACRES) =
                     1.40
                               SUBAREA RUNOFF(CFS) = 0.99
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.322
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END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) = 0.32 FLOW VELOCITY(FEET/SEC.) = 11.48
  LONGEST FLOWPATH FROM NODE 17.00 TO NODE
FLOW PROCESS FROM NODE 23.00 TO NODE 24.00 IS CODE = 31
 >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<
  >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW) << <<
ELEVATION DATA: UPSTREAM(FEET) = 14.50 DOWNSTREAM(FEET) = 9.10
  FLOW LENGTH(FEET) = 95.00 MANNING'S N = 0.013
  DEPTH OF FLOW IN 15.0 INCH PIPE IS 8.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) = 12.40
  ESTIMATED PIPE DIAMETER (INCH) = 15.00
                                                          NUMBER OF PIPES = 1
  PIPE-FLOW(CFS) = 8.63

PIPE TRAVEL TIME(MIN.) = 9.13 Tc(MIN.) = 13.33
                                           17.00 TO NODE
  LONGEST FLOWPATH FROM NODE
                                                                    24.00 = 1283.00 FEET.
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 FLOW PROCESS FROM NODE 24.00 TO NODE 24.00 IS CODE = 81
  >>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<><<<
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 3.499
  GENERAL COMMERCIAL RUNOFF COEFFICIENT = .8200
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) = 95
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3802
  SUBAREA AREA(ACRES) = 1.00 SUBAREA RUNOFF(CFS) = 2.87
                                      8.6 TOTAL RUNOFF(CFS) =
  TOTAL AREA(ACRES) =
  TC(MIN.) = 13.33
FLOW PROCESS FROM NODE 25.00 TO NODE 27.00 IS CODE = 21
 >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<
RESIDENTIAL (7.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .4800
   SOIL CLASSIFICATION IS "A"
   S.C.S. CURVE NUMBER (AMC II) = 63
   INITIAL SUBAREA FLOW-LENGTH(FEET) = 100.00
   UPSTREAM ELEVATION(FEET) - 27.80
                                           26.60
1.20
   DOWNSTREAM ELEVATION(FEET) =
   ELEVATION DIFFERENCE(FEET) =
   SUBAREA OVERLAND TIME OF FLOW(MIN.) =
                                                         8.660
   WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
               THE MAXIMUM OVERLAND FLOW LENGTH = 68.00
               (Reference: Table 3-1B of Hydrology Manual)
               THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN To CALCULATION!
    100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 4.622
   SUBAREA RUNOFF(CFS) =
                                      0.89
                                    0.40 TOTAL RUNOFF(CFS) =
   TOTAL AREA(ACRES) =
**********************
   FLOW PROCESS FROM NODE 27.00 TO NODE 29.00 IS CODE = 3%
   >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<CCCC
   >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW) <<<<
 ELEVATION DATA: UPSIREAM(FEET) = 23.10 DOWNSTREAM(FEET) = 22.84
   FLOW LENGTH(FEET) = 26.00 MANNING'S N = 0.213
DEPTH OF FLOW IN 9.0 INCH PIPE IS 4.8 INCHES
   PIPE-FLOW VELOCITY(FEET/SEC.) = 3.67
ESTIMATED PIPE DIAMETER(INCH) = 9.00
                                                          NUMBER OF PIPES = 1
   PIPE-FLOW(CFS) = 0.89
   PIPE TRAVEL TIME(MIN.) = 8.12 Tc(MIN.) = 1000 Tc MIN.) = 1000 Tc MIN.] = 1000 
                                                                   8.78
                                                                     29.00 =
                                                                                     126.00 FEET.
 FLOW PROCESS FROM NODE 29.00 TO NODE 29.00 IS CODE * 81
   >>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<>>>
  108 YEAR RAINFALL INTENSITY(INCH/HOUR) = 4.582
    STREETS & ROADS (HARD SURFACE) RUNOFF COEFFICIENT = .6600
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SOIL CLASSIFICATION IS "A"
  S.C.S. CURVE NUMBER (AME II) = 74
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.5665
  SUBAREA AREA(ACRES) = 0.37 SUBAREA RUNOFF(CFS) = TOTAL AREA(ACRES) = 0.8 TOTAL RUNOFF(CFS) =
                                                                                1.12
  TC(MIN.) =
                    8.78
*************************************
 FLOW PROCESS FROM NODE 29.80 TO NODE 31.80 IS CODE = 31
  >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW) <<<<<
ELEVATION DATA: UPSIREAM(FEET) = 22.84 DOWNSTREAM(FEET) = 21.44 FLOW LENGTH(FEET) = 139.00 MANNING'S N = 9.913 DEPTH OF FLOW IN 12.0 INCH PIPE IS 6.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) = 4.49
  ESTIMATED PIPE DIAMETER(INCH) = 12.00
                                                          NUMBER OF PIPES = 1
  PIPE-FLOW(CFS) = 2.00
  PIPE TRAVEL TIME(MIN.) = 0.52 TC(MIN.) = LONGEST FLOWPATH FROM NODE 25.00 TO NODE
                                                                     9.29
FLOW PROCESS FROM NODE 31.00 TO NODE 31.00 IS CODE = 81
***
  >>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 4.416
  RESIDENTIAL (7.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .4800
  SOIL CLASSIFICATION IS "A"
  5.C.S. CURVE NUMBER (AMC II) = 63
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.5324
  SUBAREA AREA(ACRES) = 0.50 SUBAREA RUNOFF(CFS) = 1.06
TOTAL AREA(ACRES) = 1.3 TOTAL RUNOFF(CFS) = 2.9
  TC(MIN.) =
FLOW PROCESS FROM NODE 31.00 TO NODE 33.00 IS CODE = 31
>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREACCCC
  >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
ELEVATION DATA: UPSTREAM(FEET) = 21.44 DOWNSTREAM(FEET) = 16.00
   FLOW LENGTH(FEET) = 380.00 MANNING'S N = 0.013
  DEPTH OF FLOW IN 12.0 INCH PIPE IS 7.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) = 5.63
ESTIMATED PIPE DIAMETER(INCH) = 12.00
                                                         NUMBER OF PIPES = 1
  PIPE-FLOW(CFS) = 2.99
PIPE TRAVEL TIME(MIN.) = 1.12 Tc(MIN.) = 10.42
LONGEST FLOWPATH FROM NODE 25.00 TO NODE 33.60
                                                                   33.00 =
                                                                                      645.00 FEET.
FLOW PROCESS FROM NODE 33.00 TO NODE 33.00 TS CODE = 81
                 >>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOWCCCCC
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 4.102
   RESIDENTIAL (7.3 DU/AC OR LESS) RUNOFF COEFFICIENT # .4800
   SOIL CLASSIFICATION IS "A"
   S.C.S. CURVE NUMBER (AMC II) = 63
   AREA-AVERAGE RUNOFF COEFFICIENT # 0.5092
   SUBAREA AREA(ACRES) = 1.01 SUBAREA RUNOFF(CFS) = 1.09
TOTAL AREA(ACRES) = 2.3 TOTAL RUNOFF(CFS) = 4.3
   TC(MIN.) =
                   18.42
FLOW PROCESS FROM NODE 35.00 TO NODE 37.00 IS CODE = 21
 >>>> RATIONAL METHOD INITIAL SUBAREA ANALYSIS
 URBAN NEWLY GRADED AREAS RUNOFF COEFFICIENT = .6600
   SOIL CLASSIFICATION IS "A"
   5.C.S. CURVE NUMBER (AMC 11) = 77
   INITIAL SUBAREA FLOW-LENGTH(FEET) =
   UPSTREAM ELEVATION(FEET) - 26.80
   ELEVATION DIFFERENCE(FEET) = 7.10
SUBAREA CHEEN AND THE SUBAREA CHEEN 
   SUBAREA OVERLAND TIME OF FLOW(MIN.) *
                                                         5.235
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624PR100.RES

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WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
       THE MAXIMUM OVERLAND FLOW LENGTH = 87.69
       (Reference: Table 3-18 of Hydrology Manual)
       THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN TO CALCULATION!
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 6.395
 SUBAREA RUNOFF(CFS) =
                   2.03
 TOTAL AREA(ACRES) =
                   0.48 TOTAL RUNOFF(CFS) =
FLOW PROCESS FROM NODE 37.00 TO NODE 39.00 IS CODE = 31
 >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
ELEVATION DATA: UPSTREAM(FEET) = 16.20 DOWNSTREAM(FEET) = 15.70 FLOW LENGTH(FEET) = 53.00 MANNING'S N = 9.013
 DEPTH OF FLOW IN 12.0 INCH PIPE IS 6.8 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) = 4.40
 ESTIMATED PIPE DIAMETER(INCH) = 12.00
                                NUMBER OF PIPES = 1
 PIPE-FLOW(CFS) =
 PIPE TRAVEL TIME(MIN.) = 0.20 Tc(MIN.) =
 LONGEST FLOWPATH FROM NODE
                       35.08 TO NODE
                                     39.88 =
FLOW PROCESS FROM NODE 39.00 TO NODE 39.00 IS CODE = 81
     >>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<
***********
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 6.241
 STREETS & ROADS (HARD SURFACE) RUNOFF COEFFICIENT = .6600
 SOIL CLASSIFICATION IS "A"
 S.C.S. CURVE NUMBER (AMC II) = 74
 AREA-AVERAGE RUNDFF COEFFICIENT = 0.6600
 SUBAREA AREA(ACRES) = 0.11 SUBAREA RUNOFF(CFS) = 0.45
TOTAL AREA(ACRES) = 0.6 TOTAL RUNOFF(CFS) = 2.4
 TOTAL AREA(ACRES) =
                   0.6 TOTAL RUNOFF(CFS) =
 TC(MIN.) = 5.44
FLOW PROCESS FROM NODE 39.00 TO NODE 41.00 IS CODE = 31
>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREACCCC
 >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
ELEVATION DATA: UPSTREAM(FEET) = 15.70 DOWNSTREAM(FEET) = 14.85 FLOW LENGTH(FEET) = 100.00 MANNING'S N = 0.013
 DEPIH OF FLOW IN 12.0 INCH PIPE IS 8.0 INCHES
 PIPE-FLOW VELOCITY(SEET/SEC.) = 4.39
                                NUMBER OF PIPES = 1
 ESTIMATED PIPE DIAMETER(INCH) = 12.00
 PIPE-FLOW(CFS) =
                 2.43
 PIPE TRAVEL TIME(MIN.) = 0.38 Tc(MIN.) =
                                     5.82
 LONGEST FLOWPATH FROM NOOE
                        35.00 TO NODE
                                     41.00 =
                                              403.02 FEET.
FLOW PROCESS FROM NODE 41.88 TO NODE 41.00 IS CODE = 81
>>>>AUDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
100 YEAR RAINFALL INTENSITY(INCH/HOUR) # 5.975
 STREETS & ROADS (HARD SURFACE) RUNOFF CDEFFICIENT = .6600
 SOIL CLASSIFICATION IS "A"
 S.C.S. CURVE NUMBER (AMC II) = 74
 AREA-AVERAGE RUNOFF COEFFICIENT = 0.6608
 SUBAREA AREA(ACRES) = 1.25 SUBAREA RUNOFF(CFS) = 4.93
TOTAL AREA(ACRES) = 1.8 TOTAL RUNOFF(CFS) = 7.3
 TC(MIN.) =
           5.82
FLOW PROCESS FROM NODE 41.80 TO NODE 43.80 IS CODE = 31
>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW) <<<<<
ELEVATION DATA: UPSTREAM(FEET) = 14.85 DOWNSTREAM(FEET) = 14.50
  FLOW LENGTH(FEET) = 36.00 MANNING'S N = 8.013
  DEPTH OF FLOW IN 18.8 INCH PIPE IS 11.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) = 6.08
  ESTIMATED PIPE DIAMETER(INCH) = 18.00
                               NUMBER OF PIPES = 1
  PIPE-FLOW(CFS) =
                  7.26
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PIPE TRAVEL TIME(MIN.) = 0.10 Tc(MIN.) = 5.91
 LONGEST FLOWPATH FROM NODE 35.00 TO NODE
                                   43.00 ∞
                                             439.80 FEET.
FLOW PROCESS FROM NODE 43.00 TO NODE 43.00 IS CODE = 81
>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.911
 RESIDENTIAL (7.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .4800
 SOIL CLASSIFICATION IS "A"
 S.C.S. CURVE NUMBER (AMC II) = 63
 AREA-AVERAGE RUNOFF COEFFTCIENT = 0.5774
 SUBAREA AREA(ACRES) = 1.56 SUBAREA RUNDFF(CFS) = 4.43
TOTAL AREA(ACRES) = 3.4 TOTAL RUNDFF(CFS) = 11.
 TC(MIN.) =
          5.91
FLOW PROCESS FROM NODE 43.00 TO NODE 43.00 IS CODE = 81
   >>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<>>>
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.911
 RESIDENTIAL (7.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .4890
 SOIL CLASSIFICATION IS "A"
 S.C.S. CURVE NUMBER (AMC II) = 63
AREA-AVERAGE RUNOFF COEFFICIENT = 8.5656
 SUBAREA AREA(ACRES) = 0.47 SUBAREA RUNOFF(CFS) = TOTAL AREA(ACRES) = 3.9 TOTAL RUNOFF(CFS) =
                                          12,94
 TC(MIN.) = 5.91
FLOW PROCESS FROM NODE 45.00 TO NODE 47.00 IS CODE = 21
 >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<
RESIDENTIAL (7.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .4800
 SOIL CLASSIFICATION IS "A"
 S.C.S. EURVE NUMBER (AMC II) = 63
 INITIAL SUBAREA FLOW-LENGTH(FEET) = 170.00
 UPSTREAM ELEVATION(FEET) = 16.10
 DOWNSTREAM ELEVATION(FEET) =
                        14.20
 ELEVATION DIFFERENCE(FEET) =
 SUBAREA OVERLAND TIME OF FLOW(MIN.) =
                              8.787
 WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
        THE MAXIMUM OVERLAND FLOW LENGTH = 66.76
        (Reference: Table 3-18 of Hydrology Manual)
        THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN TO CALCULATION!
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 4.579
 SUBAREA RUNDEF(CFS) =
                   1.08
 TOTAL AREA(ACRES) =
                   0.49 TOTAL RUNDFF(CFS) =
FLOW PROCESS FROM NODE 47.00 TO NODE 49.00 IS CODE = 31
 >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREACCCC
 >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<
ELEVATION DATA: UPSTREAM(FEET) * 11.70 DOWNSTREAM(FEET) = 10.85
  FLOW LENGTH(FEET) = 168.00 MANNING'S N = 0.013
DEPTH OF FLOW IN 9.0 INCH PIPE IS 7.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) = 2.87
  ESTIMATED PIPE DIAMETER (INCH) = 9.00
                               NUMBER OF PIPES = 1
  PIPE-FLOW(CFS) =
                 1.88
  PIPE TRAVEL TIME (MIN.) = 0.98 Tc(MIN.) =
  LONGEST FLOWPATH FROM NODE
                       45.00 TO NODE
                                     49.00 ₽
                                             338.00 FEET.
FLOW PROCESS FROM NODE 49.00 TO NODE 49.00 IS CODE = 81
 >>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 4.278
  RESIDENTIAL (7.3 DU/AC OR LESS) RUNDEF COEFFICIENT = .4800
  SOIL CLASSIFICATION IS "A"
  S.C.S. CURVE NUMBER (AMC 11) = 63
  AREA-AVERAGE RUNDER COEFFICIENT = 0.4800
  SUBAREA AREA(ACRES) = 0.27 SUBAREA RUNOFF(CFS) =
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8.8 TOTAL RUNOFF(CFS) =
 TOTAL AREA(ACRES) ⇒
 TC(MIN.) =
            9.76
FLOW PROCESS FROM NODE 49.00 TO NODE 51.00 IS CODE = 31
 >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW) <<<<<
ELEVATION DATA: UPSTREAM(FEET) = 10.85 DOWNSTREAM(FEET) = 10.00
 FLOW LENGTH(FEET) = 170.00 MANNING'S N = 0.013
 DEPTH OF FLOW IN 12.0 INCH PIPE IS 7.1 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) = 3.24
 ESTIMATED PIPE DIAMETER (INCH) = 12.00
                                  NUMBER OF PIPES = 1
 PIPE-FLOW(CFS) =
                   1.56
 PIPE TRAVEL TIME(MIN.) = 0.88 Tc(MIN.) = 10.64
LONGEST FLOWPATH FROM NODE 45.00 TO NODE 51.00
                                         51.00 =
                                                   508.00 FEET.
FLOW PROCESS FROM NODE 51.00 TO NODE 53.00 IS CODE = 51
             >>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<>>>>
 >>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT) <<<<<
ELEVATION DATA: UPSTREAM(FEET) = 10.00 DOWNSTREAM(FEET) = 9.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 135.00 CHANNEL SLOPE = 0.0074
 CHANNEL BASE(FEET) # 10.00 "Z" FACTOR = 50.000
 MANNING'S FACTOR # 0.030 MAXIMUM DEPTH(FEET) =
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 3.592
 RESIDENTIAL (7.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .4800
 SOIL CLASSIFICATION IS "A"
 S.C.S. CURVE NUMBER (AMC II) = 63
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 1.04
 AVERAGE FLOW DEPTH(FEET) = 0.17 TRAVEL TIME(MIN.) = 2.16
 Tc(MIN.) = 12.80
 SUBARGA AREA(ACRES) = 2.06
                              SUBAREA RUNOFF(CF5) = 3.55
 AREA-AVERAGE RUNOFF COEFFICIENT = 0.480
                                 PEAK FLOW RATE(CFS) =
 TOTAL AREA(ACRES) =
                       2.8
  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) = 0.21 FLOW VELOCITY(FEET/SEC.) = 1.14
  LONGEST FLOWPATH FROM NODE
                           45.00 TO NODE
                                                    643.80 FEET.
老者不平心不舍风水有人也有一种来去,不去去,不去去,不去去,不去去,我们的人们的人们的人们的人人,也不会不会的人们的人们的人人,我们们们的人们的人们的人人,我们们们们们的人们的人们的人们的人人,我们们们
FLOW PROCESS FROM NODE 53.00 TO NODE 53.00 IS CODE = 81
 >>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<
……从决于中心的结婚生活与自己自己自己自己自己自己自己自己的自己的要求,就是我们就是我们的政治,但是不是自己自己的自己是是不是不是不要的。
  100 VEAR RAINEALL INTENSITY(INCH/HOUR) = 3.592
  STREETS & ROADS (HARD SURFACE) RUNOFF COEFFICIENT = .6600
  SOIL CLASSIFICATION IS "A"
  S.C.S. CURVE NUMBER (AMC II) = 74
  AREA-AVERAGE RUNOFF COEFFICIENT # 0.5278
  SUBAREA AREA(ACRES) = 1.02 SUBAREA RUNOFF(CFS) = 2.42
TOTAL AREA(ACRES) = 3.8 TOTAL RUNOFF(CFS) = 7.2
  TOTAL AREA(ACRES) -
  TC(MIN.) = 12.80
FLOW PROCESS FROM NODE 55.00 TO NODE 56.00 IS CODE = 21
___________
  >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<
GENERAL COMMERCIAL RUNDER COEFFICIENT = .8200
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) = 95
  INITIAL SUBAREA FLOW-LENGTH (FECT) =
  UPSTREAM ELEVATION(FEET) = 11.24
  DOWNSTREAM ELEVATION(FEET) =
                           11.15
  ELEVATION DIFFERENCE (FEET) =
                             9.69
  SUBAREA OVERLAND TIME OF FLOW(MIN.) -
                                   4.490
  WARNING: THE MINIMUM OVERLAND FLOW SLOPE, 8.5%, IS USED IN TO CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 6.587
  NOTE: RAINFALL INTENSITY IS BASED ON To = 5-MINUTE.
  SUBAREA RUNOFF(CFS) = 0.54
TOTAL AREA(ACRES) = 0.10
                      0.10 TOTAL RUNOFF(CFS) =
```

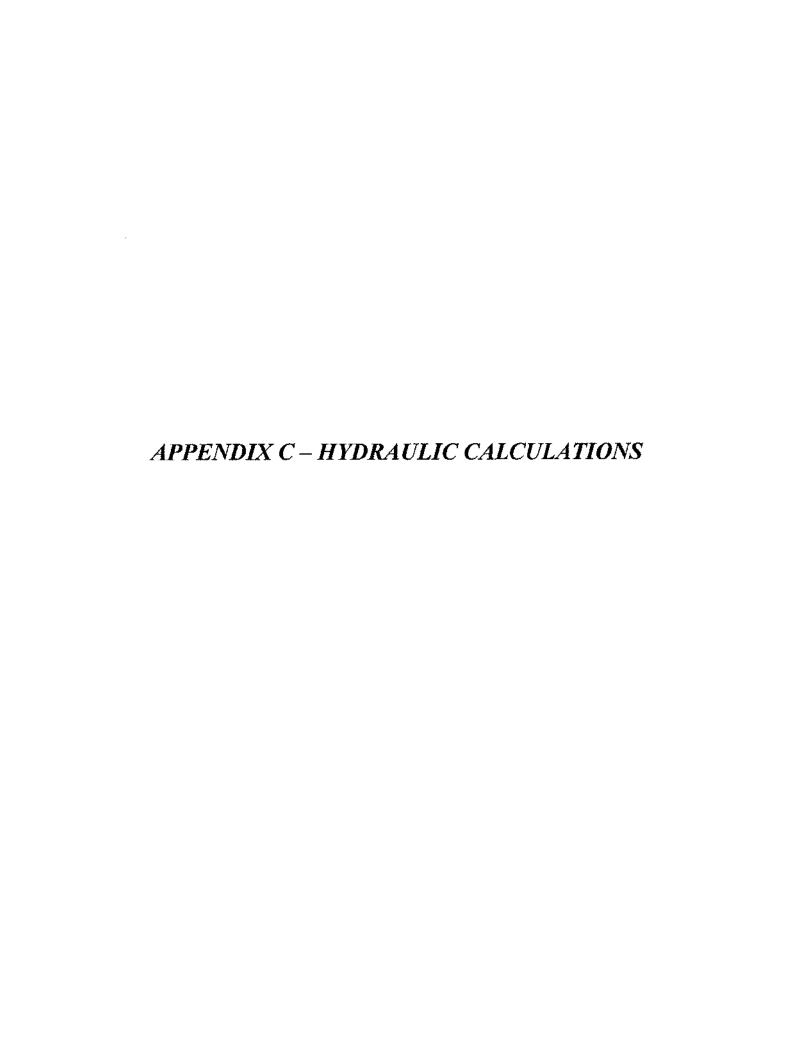
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>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>(STANDARD CURB SECTION USED)<<<<<
UPSTREAM ELEVATION(FEET) = 11.15 DOWNSTREAM ELEVATION(FEET) = 10.24
 STREET LENGTH(FEET) = 300.00 CURB HEIGHT(INCHES) = 8.0
 STREET HALFWIDTH(FEET) = 30.00
 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) = 20.80
 INSIDE STREET CROSSFALL(DECIMAL) = 0.020
OUTSIDE STREET CROSSFALL(DECIMAL) = 0.020
 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 1
 STREET PARKWAY CROSSFALL(DECIMAL) = 0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) = 0.0150
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section = 0.0200
   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =
                                                     3.89
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) = 0.46
   HALFSTREET FLOOD WIDTH(FEET) = 15.04
   AVERAGE FLOW VELOCITY(FEET/SEC.) # 1.59
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) = 0.73
  STREET FLOW TRAVEL TIME (MIN.) = 3.15 Tc(MIN.) = 7.64
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.012
  GENERAL COMMERCIAL RUNOFF COEFFICIENT = .8200
  SOIL CLASSIFICATION IS "D"
  S.C.S, CURVE NUMBER (AMC II) = 95
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.820
  SUBAREA AREA(ACRES) = 1.61 SUBAREA RUNOFF(CFS) =
  TOTAL AREA(ACRES) =
                                 PEAK FLOW RATE(CFS) +
  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.54 HALFSTREET FLOOD WIDTH(FEET) = 19.10
 FLOW VELOCITY(FEET/SEC.) = 1.83 DEPTH*VELOCITY(FT*FT/SEC.) = 0.99
LONGEST FLOWPATH FROM NODE 55.80 TO NODE 57.80 = 350.00 FE
                                                     350.00 FEET.
FLOW PROCESS FROM NODE 59.00 TO NOOF 60.00 IS CODE = 21
        >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<
GENERAL COMMERCIAL RUNOFF COEFFICIENT = .8200
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) = 95
  INITIAL SUBAREA FLOW-LENGTH(FEET) =
  UPSTREAM ELEVATION(FEET) = 12.50
  ELEVATION DIFFERENCE(FEET) = 0.10
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =
                                     4.490
  WARNING: THE MINIMUM OVERLAND FLOW SLOPE, 0.5%, IS USED IN TO CALCULATION!
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 6.587
  NOTE: RAINFALL INTENSITY IS BASED ON To = 5-MINUTE.
  SUBAREA RUNOFF(CFS) = 0.27
TOTAL AREA(ACRES) = 0.05 TOTAL RUNOFF(CFS) =
FLOW PROCESS FROM NODE 60.00 TO NODE 61.00 IS CODE = 61
 >>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREACCCC
  >>>>(STANDARD CURB SECTION USED)<<<<<
 UPSTREAM ELEVATION(FEET) = 12.40 DOWNSTREAM ELEVATION(FEET) = 11.25
  STREET LENGTH(FEET) = 310.00 CURB HEIGHT(INCHES) = 8.0
  STREET HALFWIDTH(FEET) = 30.00
  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK (FEET) = 20.00
  INSIDE STREET CROSSFALL(DECIMAL) = 0.020
OUTSIDE STREET CROSSFALL(DECIMAL) = 0.020
  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 1
  STREET PARKWAY CROSSFALL (DECIMAL) = 0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) = 0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section = 0.0200
    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
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STREET FLOW DEPTH(FEET) = 0.34
   HALFSTREET FLOOD WIDTH(FEET) = 8.84
AVERAGE FLOW VELOCITY(FEET/SEC.) = 1.35
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) = 0.45
 STREET FLOW TRAVEL TIME(MIN.) = 3.81 Tc(MIN.) = 100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 4.749
 GENERAL COMMERCIAL RUNOFF COEFFICIENT = .8200
 SOIL CLASSIFICATION IS "D"
 S.C.S. CURVE NUMBER (AMC II) = 95
 AREA-AVERAGE RUNOFF COEFFICIENT = 0.820
 SUBAREA AREA(ACRES) = 0.53 SUBAREA RUNOFF(CFS) = 2.06
TOTAL AREA(ACRES) = 0.6 PEAK FLOW RATE(CFS) =
 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.39 HALFSTREET FLOOD WIDTH(FEET) = 11.37
FLOW VELOCITY(FEET/SEC.) = 1.52 DEPTH*VELOCITY(FT*FT/SEC.) = 0.59
LONGEST FLOWPATH FROM NODE 59.00 TO NODE 61.00 = 360.00 FEET.
END OF STUDY SUMMARY:
 TOTAL AREA(ACRES) = 0.6
PEAK FLOW RATE(CFS) = 2.26
                               0.6 TC(MIN.) =
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END OF RATIONAL METHOD ANALYSIS

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3111 MANCHESTER AVE

EXISTING CMP STORM DRAIN - HYDRAULIC ANALYSIS

REFERENCE PLAN: DRAWING NO. SI-0021 AS-BUILT DRAWING PREPARED BY NOLTE AND ASSOCIATES, INC. DATED 6-18-01

SOFTWARE: CIVILDESIGN CORPORATION WATER SURFACE AND PRESSURE GRADIENT (WSPGW)

		:	OUTLET							
EX. SD	MAX WSE	MAX HEAD (ft)	ELEV. (EL)	Q OUT (cfs)	Velocity (fps)	CMP SIZE (in.)	No. of Pipes	n	5 (%)	L (ft)
В	10.44	3.53	6.91	23.90	8.27	24	2	0.022	0.70%	65.91
С	10.44	2.23	8.21	17.64	6.92 ⁽³⁾	24	1	0.022	0.98%	69.07
D	10.44	1.50	8.94	8.10	5.82 ⁽¹⁾	18	1	0.022	1.28%	68.08
E	10.44	1,44	9,00	7.12	5.49 ⁽²⁾	18	1	0.022	0.93%	66.55
F	10.44	0.85	9.59	3.55	4.24 ⁽²⁾	18	1	0.022	0.86%	71.55
		<u> </u>	Total:	84.21 ⁽²⁾						

Notes:

- 1. These velocities for the existing storm drain crossings are used as the maximum allowable velocities at the existing outlet locations into the lagoon
- 2. The total peak flow conveyed by the six existing CMP pipes is 84.21cfs based on the parameters of the analysis. The total existing condition flows per Hydrology Map nodes 14 and 21, including street flows, is Q100=85.07cfs; therefore, since the max WSE of 10.44EL resulted in very similar peak flows estimation of the existing storm drain outlet maximum velocities into the lagoon.

3111 MANCHESTER AVE
PROPOSED STORM DRAIN - PRELIMINARY HYDRAULIC ANALYSIS

		Proposed Outlet	Existing Outlet		Max Water	
SD Line	Q100 (cfs)	Velocity (fps)	Velocity (fps)	Type/Size	Depth (ft)	Notes
A (offsite)	66.77	6.45	6.92	2 - 4'Wx1.5'H RCB	1.46	624_PR-A2.OUT; Two Piers of 4x1.5
В	7.28	5.54	6.92	18	1.58	624_PR-18C.OUT
C	7.03	5.46	5.82	18	1.54	624_PR-18C.OUT
D	2.26	3.68	5.49	18	0.79	624_PR-18C.OUT
E	12.94	4.37 (2)	4.24	5'Wx1.5'H RCB	0.82	624_PR-5X15C.OUT
F (offsite)	11.44	4.19	4.24	5'Wx1.5'H RCB	0.76	624_PR-5X15C.OUT

Notes:

- 1. Line A and F convey offsite/undeveloped flows only
- 2. Line E outlet velocity is higher than existing control velocity by 3%. Additional analysis to be conducted during final engineering to upsize and/or provide mitigation (ie. detention or other) onsite.
- 3. Hydraulic analysis for Line B and E utilizes the Q100 for a conservative analysis.
- 4. Hydraulic model of each storm drain is a dummy model for preliminary analysis purposes, and will be updated to match the final design during final engineering.

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PAGE 1

Date: 5-31-2019 Time:11:29: 3

Program Package Serial Number: 1841 WATER SURFACE PROFILE LISTING

"3111 MANCHESTER" HYDRAULICS
Prepared By: URBAN RESOURCE CORPORATION

		Pr				RPORATIO								Prepared By: URBAN RESOURCE CORPORATION Detention Outlet - 24" CMP Filename: 624_EX-8.wsw													
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1 809.9 57	6.519	1.948	8.468	20. 0 0	6.41	.64	9.11	.00	1.61	.64	2.000	.000	.00	1 .0													
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3.197	.0070					. 0204	.07	1.95	. 51	2.00	.022	.00	.00	PIPE													
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1013.154	6.542	2.000	8.542	20.08	6.37	-63	9.17	. 99	1.61	.00	2.000	.000	.99	1 .0													
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52.756	.0070	'		,		.0217	1.15	2.88		2,88	.022	.00	.80	PIPE													
WALL ENT							2112			-10-																	
MACE EN	l i	1 1		: 1				ŧ	r	ı		1		ŧ													
1065.910	6,910	2.813	9.723	: 28.06	6.37	.63	10.35	.09	1.61	. 20	2.000	.000	, 69	9 .0													
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		"311	1 MANCHEST	'ER" HYDRAU	ILICS				e																		
		Þ٢٠	epared By:	URBAN RES	OURCE COL	RPORATIO	N.																				
			Detention	Outlet - 2	4" CMP		Filena	ne: 624_6	X-B.wsw																		
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	Invert	Depth	Water	0 1	Vel	Vel	Energy	Super	Critical	Flow Top	Height/	Base Wt		No Wth													
Station	Elev	(FT)	Elev	(CFS)	(FPS)	Head	Grd.£1.					ar I.D.		Prs/Pip													
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L/Elem			i	i	,	SF Ave	HF	SE Doth	Froude N	Noem On	"N"	X-Fall	ZR	Type Ch													
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1999.999	l 6,450∂	1,642	8,692	21.00	7.61	.90	8,99	.88	1.64	1.53	2,000	.009	.00	1 .0													
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.671	.0070	_				.0236	.02	1.64	1,00	2.00	.022	.00	.00	PIPÉ													
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1000.671	6.455	1.735	8.189	21.00	7.26	.82	9.01	.00	1.64	1.36	2.000	.000	.00	1 .0													
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2.805	.0070	ĺ			İ	,0220	. 9 6	1.73 	!	2.00	.022	.00 	.00	PIPE	_
1003.476	б.474 -	1.851	8.325 	21.00 -	6.92 	.74	9. 0 7 	.00 	1.64	1.05 	2.000	.000 	,]-	.0
6,513	.0 0 70	I	l i		l	.0223	. 1 5	1.85 	.72	2.00	.022	.00 	.00	PIPE	
1009.988	6.520	2,090	8.520	21.80	ˈ 6∡68 	. 69	9.21	.00 	1.64	.09	2.000	.000	,00	1	.0
55.922	.0070				, ,	.0239	1.34	2.00	.89	2.00	.022	.00	. 99	PIPE	
.	FRANCE	l					10.50	I 🔐	1.64	-00	2.000	.000	.00	l ø	. 0
1065.910	6.910 	2.990 	9.980 	21.00 -	6.68 	.69 	10.59 	.00 						- [©]	. 0
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******	*******	******		Outlet - 2		*****		ne: 624 *******	EX-B.wsw *******	*****	*******	*****	*****	*****).**
Station	Invert Elev	Depth	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth		Height/ DiaFT		 ZL	No Wit Prs/P	
-	-	- ' -							 Froude N		- "N"	- X-Fall	 ŽR	Type	
******** F\#T6W	Ch Slope	 *******	*******	******	******	*****	*****	******	7	*****	******	******	*****	****	
1000.000	6.450	1.675	8-125	22.00	7.83	.95	9.08	.00	1.68	1.48	2.000	. 688 1_	.00	1 1 1	.0
.725	.0070		- •	-	 	.0251	.02	1.68	1.96	2.88	.022	.99	.00	PIPE	
1000.725	6.455	1.775	8.230	22,00	7.47	.87	9.10	.69	1.68	1.26	2.000	.000	.08	1	.e
3. 31 3	.0070	[- - -		- "		.0238	.08	1.77	.86	2.00	.022	.00		PIPE	
1804.038	6.478	1.909	8.387	i 22.00	7.12	.79	9 .1 7	.00	1.68	.83	2.000	.000	.00	1	.6
3.743	.9979			-]	- ~	1.91	 23.	2.00	.022	.00	.00	PIDE	
1007,781	6.504	2,000	8,504	22.00	7.00	.76	9.27	. 02	1.68	. 29	2.000	.098	.00	1	.e
- 58.129					- •	 .0263	1.53	 2.68	.09	2.39	.022	 .ee	.9 0	PIPE	
	TRANCE	1 1			l	1		I	1	l	ı	1	l	1	
1065.910	6.910	3.159	10.679	22.60	7.80	.76 	10.84	. 90	1.68	.ee	2.000	.000	.08	, 1 -	.8
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		Pr	epared By: Detention	Outlet - 2		RPURATIO		ne: 624_	EX-B.wsw		خدمت خریان را در است.	نسند عربان بان وان بان	ந்து நேர்கள்	a granden ar -	
********	Invert	Depth	waxaxax Water	·*************************************	******* Vel	******* Vel	Energy		Critical					No vit	
Station	Elev	(FT)	Elev	(CFS)	(FPS)	Head	Grd.El.	Elev	Depth	Width	DiaFT	or I.D.	ZL	Prs/P	'ip

		624_EX-B.OUT													
L/Elem ********	- Ch Slope *******	- ******	******	****	 ********	 SF Ave ******	- 4 光 *******		Froude N	Norm Dp		 X-Fall ******		 Type	
1000,000						1.01	9.16	.00	1.71	1.42	2.000	.908			.0
.794	.0070	-			!	 .0268	.02	1.71		2.90	.922	.00		PIPE	
1000.794	6.456		8.269	23.00	7,68	.92 .92	9.19	. 00	1.71	1.15	2.000	.000	.00		.0
- 4,739	•			-	 -	 - 0270	.13	1.81		2.00	.022	.90	•	PIPE	
1005.533						.83	9.31	.00	1.71	. 26	2.000	.080	.00		. 0
.372					- -	. 0279	.01	1.99		2.00	.022	.00		PIPE	
1005.905	6.491	2.900	8.491	23.08		.83	9.32	.03	1.71	. 99	2.000	.080	.00		.0
- 60.005	.0070					 .0287	1.72	2.00	.00	2.00	.022	.06	.00	PIPE	
WALL ENT	RANCE	1 1	<u>.</u>			1	1		1 1					ı	
1065.910	6.910	3.358	10.268	23.00	7.32	.83	11.10	.00	1.71	.00	2.000	.000	.00		.0

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W S P G W - CIVILDESIGN Version 14.06

PAGE 1

Program Package Serial Number: 1841

WATER SURFACE PROFILE LISTING

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Date: 5-31-2019 Time:11:29: 3

"3111 MANCHESTER" HYDRAULICS

Prepared By: URBAN RESOURCE CORPORATION Detention Outlet - 24" CMP Filename: 624_EX-8.wsw

*****	****	******	*****	****	****	*****	******	*****	*****	****	*****	*****	****	****	***
Station	Invert Elev	Depth	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy		•	Flow Top		1	•	No WI	
SEALIDE	Erea	(51)	l rrea	(4.5)	[(FF3)	. :	Grd.El.	ī		Width	U14, -51	pr 1.D.	4L	[Prs/F	Th
L/Elem	Ch Slope	-	[-	-	SF Ave			Froude N	Norm Dp		X-Fall		Туре	Ch
*****	*****	****	*******	******	*****	******	****	******	*****	****	*****	橡胶粉妆妆的妆	****	****	***
1800.000		1.718				1.03	9.20	. 99	1.72	1.39	2.000	.000	ee	1	.8
.829	- .0070					. 9276	.02	1.72	1.00	2.00	.022		.00	PIPE	
1000.829	6,456	1.829	8.284	23,40	7.77	.94	9.22	.00	1.72	1.12	2.000	,000	.00	1	. 13
	l . _ !													!	
4.587	.0070			•		.0277	.13	1.83		2.00	.022	.00	.00	PEPE	
1005.415	6.488	2.000	8.488	! 23.40	7,45	.86	9.35	.00	1.72	.09	2.000	.0 0 0	.00	1	.0
- 1						1							١,	l +	
60.495 WALL ENT	.0070		,	·	'	.0297	1.80	2.00		2.00	,022	.00	.00	PIPE	
,,,,,,	11-17-202.	1	ŧ I	1		1		ı	1	1	I			1	
1065.910	6.910	3.431	10.341	23.40	7.45	. 86	11.20	.88	1.72	.00	2.600	.000	. 90	' e	. 0
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Program Package Serial Number: 1841

WATER SURFACE PROFILE LISTING

PAGE 1

Date: 5-31-2019 Fime:11:29: 3

"3111 MANCHESTER" HYDRAULICS 0

			epared By:	URBAN RES Outlet - 2	SOURCE CO	RPORATIO		ie: 624	EX-B.WSW						
*****	******	******	****	******	****	*****	********	******	*****	******	******	*****	******	****	**
	Invert	Depth	Water	Q	Vel	Vel	Energy		Critical				:	No Wt	
Station	Elev	(FT)	Elev	(CFS)	(FPS)	Head	Grd.€1.	Elev	Depth -		DiaFT	or 1.D.	:	Prs/P	70
L/Elem *******	- Ch Slope *****	*****	*******	*****	- *******	\$F Ave	HF *******	SE Dpth	Froude N	1	*******	X-Fall ******	•	Type *****	Ch **
1000.000	6.450	1.721	8.171	23.50	8.17	1.04	9.21	.00	1.72	1.39	2.000	.000	. 89	1	.0
.844	 - 0 070					.0277	 .02	1.72		2,69	 .022		00	PTPE	
. 044	10070				1]		1			!	1	1	
1000.844	6.456	1.833	8.289	23.50	7,79	.94	9.23 	.00	1.72	1.11	2.000 	000. 	.00 _!	1 1-	.6
4.446	.0070	[]		 ·		.0288	.12	1.83	•	2.00	.622	,00	.00	PIPE	
1005.291	6.487	2.000	8.487	23.50	7.48	,87	9.36	.00	1.72	. 99	2.000	.000	.00		.0
-											.022	 .08		PIPE	
60.619 WALL ENT	.0070					.0300	1.82	2.00	.00	2.00	.022	.00	.05	PILE	
WHEE CM	romance	1								1		•		1	
1065.910	5.910	3,450	10.360	23.50	7,48	.87	11.23	.00	1.72	.89	2.000	.000		. 8	.0
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				Outlet - 2				re: 624_	EX-B.wsw		an al-ale an ale ale an market	to also the also also also also also also			
F*******	**********	*********	******	(*************************************	******** ! U~3	********	F********	LANGERS	Critical	********* 16100 You	k********* Wafaht/	кижикат. Восо (М.	****** 	No Wt	+ + h
Station	Invert Elev	Depth	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.				DiaFT		ZI.	Prs/P	
***************************************		- ` ^							· - -		- ~				at.
L/Elem	Ch Slope	 acasas acas acas acas acas ac	an alman an alman an alman	******	*****	SF Ave	HF *******	SE Dpth ******	Froude N	Norm Dp *******	"N" ******	X-Fall	ZR ****	Type	
- 4		1							!	!	1		1		

Detention Outlet - 24 CMP Filename: 624_EX-5.WSW														****	***
Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	: '	Critical Depth	Flow Top Width				No W	
L/Elem ********	Ch Slope	*******		*******	******	SF Ave	₩₽ ĸ≠₩₩₩≢₩₩	SE Dpth	Froude N	Norm Dp *******	"N" ******	X-Fall		Type	
1999.999	6,450	1.723 	8.173	23.60	8.20 	1.04 -	9,22	.00	1.72 	1.38 	 2.000 	.000	.08 !-	1 1	.0
- -841.	.0070	. "!			i- "I'	. 0279	.02	1.72		2.00	.022	.00	.00	PIPE	
1000.841	6.456	1.836	8.292	23.69	7.82	.95	9.24	.00	i 1.72	1.10	2.000	.000		1	.ø
- i 4.327	 .0070					- .0282	.12	1.84	•	2.69	.022	.00		PIPE	
2005.168	6.486	2.000	8.486	23.60	7.51	.88	9.36	.00	1.72	 .89	2.000	.000	.00	1	.0
- 60.742	 .0078			1		.0302	1.84	2.08	•	 2.00	.022		•	PIPE	
MALL ENT	RANCE														
1065.910	6.910	3.469	10.379	23,60	7.51	.88	11.26	. 90	! 1.72	.ଜନ	2.000	.000	.02	9	.0
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PAGE 1

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624_EX-8.0UT

Program Package Serial Number: 1841 WATER SURFACE PROFILE LISTING

"3111 MANCHESTER" HYDRAULICS

Prepared By: URBAN RESOURCE CORPORATION Filename: 624 EX-B.WSW Detention Outlet - 24" CMP Energy | Super | Critical | Flow Top | Height / | Base Wt | Vel Vel Invert Depth Water Grd.El. | Elev | Depth | Width | Dia.-FT | or I.D. | Zt | Prs/Pip (CFS) (FPS) Head Station Elev (F7) Elev SF Ave ISE Doth Froude N Norm Dp | "N" | X-Fall | ZR | Type Ch L/Elem |Ch Slope ******** 2,000 .000 .00 1 .0 1.05 9.23 .00 1200,000 6.450 23.70 8.22 .00 PIPE .0281 .02 .022 .861 .0070 1.73 2.000 .00 1.848 8.296 23.70 7.84 9.25 .000 1 .0 .95 .00 1.08 1800.861 6.456 .00 PIPE .0284 .12 .83 2.00 .022 4.190 .0070 .00 2.008 2,000 8.485 23.70 .88 9.37 .00 1.73 .00 600 1 .0 1005,051 6.485 .00 PIPE .0305 2.00 .022 1.86 60.859 .6876 WALL ENTRANCE .00 B .0 1.73 2.008 .000 11.28 .00 .00 1065.910 6.910 3.488 10.398 23.70 7.54 .88 PAGE 1 W S P G W - CTVILDESTGN Version 14.86 ♠ FILE: 624_EX-B.WSW Program Package Serial Number: 1841 WATER SURFACE PROFILE LISTING Date: 5-31-2019 Time:11:29: 4 "3111 MANCHESTER" HYDRAULICS Prepared By: URBAN RESOURCE CORPORATION

Detention Outlet - 24" CMP													***	ale ale	
*******	Invert	********** Oepth	Water	0	Vel	Vel	Energy		Critical	: '	-			No M	
Station	Elev	(FT)	Elev	(CFS)	(FPS)	Head	Grd.El.	l erea	Depth	Width	[U18.~F]	or 1.0.	ZL.	Prs/	ьтħ
L/Elem	Ch Slope	[*****	6*******	******	SF Ave[}∤F :*******	SE Dpth	Froude N		"N" ******	X-Fall	ZR ****	Type	Ch
***********														i	
1000,000	5.450	1.729	8.179	23.80	8.24	1.06	9.23	.00	1.73	1.37	2,000	.008	.00	1	ø.
	•				-			•	•			.00	. 00	- 0705	
.871	.0070					.6283	.02	1.73	1.90	2.00	.022 !	99. I	.00	- PIPE T	
1000.871	5,456	1.844	8.300	23.80	7,86	.96	9.26	.00	1.73	1.07	2.000	.000	.00	1	.0
4.054	,		-			. #1. .0286	12	 1.84	•	i 2.00	.022	 -08	00	- PIPE	
4.064	.0070	1 1	:			.02.00		1.09	1	1	1	1			
1004.935	5.484	2.000	8.484	23.80	7.58	.89	9.38	.89	1.73	,00	2.000	. 999	.00	1	.0
	j		!	1	- -		,	•	•	•	[•		·	
60.975	.0070					.0308	1.88	2.00	.00	2.00	.022	.00	.00	PIPE	
WALL EN	TRANCE									t.				1	
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1065,910			10.417	23.80	7,58	.89	31.31	.00	1.73	.00	2.000	.000		. 0	.0
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624 EX-8.0UT

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W S P G W - CIVILDESIGN Version 14.06 Program Package Serial Number: 1841

WATER SURFACE PROFILE LISTING

Date: 5-31-2019 Time:11:29: 4

PAGE 1

"3111 MANCHESTER" HYDRAULICS
Prepared By: URBAN RESOURCE CORPORATION
Detention Outlet - 24" CMP

Filename: 624_EX-B.wsw

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Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.			Flow Top Width				No Wil Prs/P	
1/Elem *******	- Ch Slope ******	 *******	****	******	4:	 SF Ave ******	— 当F *******	 SE Dpth ******	- Froude N *****	Norm Dp	*******	X-Fall +*****	ZR *****	 Type ****	Ch ***
1000.000		1.732 		23.90	8.27 	1.06	9.24	.00	 1.73 	1.36	2.000 	.000	.00	1 1	.0
. 878	•			; -	1	.0285	.03	1.73		2.00	.022	.69	.00	PIPE	
1000.878	_			23.90	7.88	.96	9.27	. 99	1.73	1.96	2.000	.000	.00	1.	.0
3.943	1			- -		.0289	.11	1.85		 2.00	 022	.00	.08	PIPE	
1004.821 - 61.089	-		8,484	23.90 	7.61 	.98. - - 	9.38 1.89	.00 2.00		.99 2.98	2.000 .022	 090 	.00	1 - PIPE	.0
WALL EN	TRANCE 6.910	 3.526	 10.436	23.90	 7.61 1	.98	11.34	.00	1.73	.89	2.008	.000	.09	1	.8

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				U/S F	DATA	STATION	INVERT	SECT						M	S ELEY	1				
						1000.000	7.530	3.							7.5	30				
ELEME	NT NO	2	IS	A REACI	ų.	*	*	*												
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ELEME	NT NO	3	TS	A WAL	ENTR	RANCE		*												
				U/S I		STATION	INVERT	SECT		F	·p									
				0,0.		1069.070	8,210	1			022									
ELEME	NT NO		TS	A SYST			~	*		·	-	*								
EEEMG	.01 100	*	+7	U/5 I		STATION	INVERT	SECT						let	S ELE	/				
				0/3		1069.070	8,210	1						**	8.219	-				
						10031010	4.210	4												

624 EX-C.OUT PAGE 1 W S P G W - CIVILDESIGN Version 14.06 ♠ FILE; 624_EX-C.WSW

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Date: 5:31-2019 Time:11:29:16

Date: 5-31-2019 Time:11:29:16

Program Package Serial Number: 1841 WATER SURFACE PROFILE LISTING

"3111 MANCHESTER" HYDRAULICS Prepared By: URBAN RESOURCE CORPORATION

		Pr	Pepared By: Detention			RPURMITU		me: 624_	EX-C.WSW	******	h 米维米米维金河:	******	***	*****	***
********** Station	********* Invert Clev	********* Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.			Flow Top Width	[Height/ DiaFT			No Wt	
L/Elem *******	- Ch Slope		**********	·· ***********************************	******* 	- SF Ave *****		 SE Dpth ******	- Froude N ******	- Norm Dp *******	****** "N"	- X-Fall ******	ZR *****	Type ****	
1000.000		1.396	8.9 26	15.00	6.41	.64	9.56	.09 	 1.40 	i 1.84	 2.000 	.000	.00	1	.0
.723	 0098	-		-	[.0171	.91	1.40	1.00	2.00	.022	.00		PIPE	
1000.723	7.537	1.459	8.996	15.00	6,11	.58	9,58	.69	1.48	1.78	2.200	.000		່ 1	.0
2.954	1					.0153	.85	1.46	.92	2.89	022	.60	00	PIPE	
1003.678	7.566	1.528	9.094	15.00	5.82	.53	9.62	.00	1.40	1.70	 2.000	.000		1	.0
7.171	1		-			.0138	.10	1.53		 _ 2,00	i- ~ 022	.69	00	PTPE	
1010.849	7.637	1.604	9.241	15.00	5.55	.48	9.72	.00	1.40	1.59	2.000	.000			.0
16.088		-		-		.01.25	.29	1.60	•	2.00	022	.00	90	PIPE	
1026.937	7.795	1,691	9.486	15.68	5.29	.44	9.92	.00	1.40	1.45	2.000	.000		1	.0
37.896	•			-	- ~	.0115	- -44	1.69	.67	2.00	.022	.00	.00	PIPE	
1064,833	8.168	1,795	9.963	15.00	5.05	.40	10.36	.00	1.40	1.21	2.888	.000		. "	.0
4.236		-				 .0111	. 05	1.79	 .57	i 2.00	.022	 .00	•	PIPE	
WALL EN	TRANCE	1	ı l	!	l	ļ	!	[ı	I	ļ	I		1	
1069.070		1.803	10.013	15.00	5.03 	.39	10.41	.00	1.40	1,19 	2.000 	.000		9	.0
↑ ↑ FILE: 62	•				PGW-	CIVILDES	SIGN Versi NI	on 14.06	-					PAGE	1

Program Package Serial Number: 1841
WATER SURFACE PROFILE LISTING

"3111 MANCHESTER" HYDRAULICS
Prepared By: URBAN RESOURCE CORPORATION
Detention Outlet - 24" CMP

Filaname: 624 FY-E WSW

			petention	narrer - 9	24 LIMP		LITTEHS	ne: 024_	にソった・独な私						
******	*******	· ************************************	******	******	*****	*****	********	*****	****	*****	****	******	*****	******	海安
	Invert	Depth	Water	Q	Ve1	Vel	Energy		Critical					No with	
Station	Elev	(FT)	Elev	(CFS)	(FPS)	Head	Grd.El.	Elev	Depth	Width	DiaFT	i	l ZL	Prs/P	10
-		i			[- -[-	1	i	ļ		!- "	1	
L/Elem	Ch Slope	(SF Ave(Froude N			X-Fall		Type	
*****	******	******	******	*******	******	*****	*********	****	*****	******	*****	*****	****	****	**
					İ				l	1]				
1688.688	7.530	1.442	8,972	15.00	6.60	.68	9.65	.09	1,44	1.79	2.000	.006	.99	1	.0
-											1		-	~	

								624_E)	(-C.OUT						
.786	.0098					.0180	.01	1.44	1.00	2.00	.022	.00	.00	PIPE	
1000 700	7.537	1.509	9.046	16.00	6.29	.61	9.66	.00	1.44	1.72	2.000	.000	.00	1	.е
1000.706							1	-1			ll-	-1		i _	
-1-	- -	-1-	- -	- -	-) -	•	- 1 -		.91	2.00	.022	. 99	.00	PIPE	
2.986	.0098	_				.0162	. 05	1.51	-31	2.00	. 1044 ! i	, 50	.00	1 11 1	
- 1	ŀ	1	I	!		_ 1	, , , i	- 1	ا م	1 53	3 000	.000	.00	1	.a
1003,612	7.566	1.583	9.149	16.00	6.00	.56	9.71	.00	1.44	1.62	2.000				. 0
-1-	· - •	- -	- -	- i -	-	,	- -				-	-		- DTDE	
6.833	.0098					.0146	.10	1.58	.83	2.00	.022	.00	.69	PIPE	
- 1			1	ŀ		1	ļ	- 1	- 1		[1			_
1010.445	7.633	1.667	9.299	15.00	5.72	.51	9.81	.00	1.44	1.49	2.990	.000	. 66	. 1	.0
- 1 -		- -	- -	-1-	- -	- -	- -	•			-	- 1		ļ-	
14.684	.0098					.0134	.26	1.67	.74	2.99	.022	, 20	.00	PIPE	
- 1	1	1	1	1		1		1				- 1		1	
1025.049	7.777	1.765	9.541	16.00	5.45	.46	10.00	.00	1.44	1.29	2.009	.000	.00	. 1	.0
-1-	[-	-1-	- 1 -	-1-	- -	-1-	- -	-1			-	-	-	-	
31.319	. 0098	•	•			.0126	.40	1.76	.64	2.00	.022	. 00	.69	PIPE	
1	1	1	ı	- 1		1		- 1				1		1	
1056.367	8.085	1.894	9.978	16.00	5.20	.42	10.40	.00	1.44	.90	2.000	.000	.89	1.	.0
-1.	-	- ! -	- -	-1-	- -	-1-	- -	-		-	-	-	-	-	
12.783	.0098	,	•	•		.0125	.16	1.89	.50	2.00	.022	.00	.00	PIPE	
WALL ENTI	RANCE														
1	1		1	- 1		1						1		1	
1069.070	8.210	1.937	10.147	16.00	5.14	.41	10.56	.00	1.44	.70	2.000	.000	.08	Ø	.0
-1-	- -	- (-	- 1 -	- -	- -	- 1 -	- -	-			-	-	-	-	
	:	'		•											

♠ FILE: 624_EX-C.WSW

W S P G W - CIVILDESIGN Version 14.06

Program Package Serial Number: 1841

WATER SURFACE PROFILE LISTING

Date: 5-31-2019 Time:11:29:16

PAGE I

"3112 MANCHESTER" HYDRAULICS Prepared By: URBAN RESOURCE CORPORATION

Detention Outlet - 24" CMP

Filename: 624_EX-C.wsw Vel Vel Energy | Super | Critical Flow Top | Height / Base Wt | Invert Depth Nater Elev [(FPS) Head Grd.El. Elev | Depth | Width | Dia. -FT or I.D. Prs/Pip Station SE Dpth Froude N Norm Dp X-Fall ZR SF Avel L/Elem |Ch Slope ***** 1.49 2.000 .000 .72 9.73 ,00 1.75 1000.000 1.486 6.79 .0189 .01 .00 PIPE ,718 .0098 1000.718 7.537 1,558 17.00 6.48 .65 9.75 2,000 .000 1 .0 .00 PIPE .05 . 91 2.00 .00 2.891 .0098 .0170 2.000 .00 .000 .59 9.80 1 1003.609 7.566 1.638 9.203 17.00 6.17 .00 PIPE .0155 .10 .022 .00 6.732 .0098 9,90 .00 1.49 1.37 2,000 .000 .00 1 5.89 .54 1010.341 7.632 1.730 9,362 17.00 .022 .0144 .21 .0098 14.325 17.00 10.11 2.000 .000 1 .8 1024.656 1.845 9.617 5.61

								624 FX-	C.OUT						
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25.350	. 0098	,		•		.0146	.37	1.84	.59	2.00	.622	.00	.00	PIPE	
1	í	1	1	1		1	(- 1				í		1	
1050.016	8.022	2.000	10.022	17.00	5.41	.45	19.48	.00	1.49	.00	2.000	.000	.00	1	.0
- -	- :-	-1-	-1-	-1-		- -	- -	- -	-1-		-	~ [~		1-	
19.054	.0098	,		·		.0157	. 39	2.00	. 98	2.00	. 022	. 98	.00	PIPE	
WALL ENTRAF	ICE														
1		1		- 1		[l	1			l		1	_
1069.070	8.210	2,121	10.331	17.00	5.41	.45	10.79	.00	1.49	.00	2.000	. 086	.00	. 0	.0
- -		- -	- -	- -		- -		- -	- -	-	-	- -		<u> </u>	
A															
▲ ETLE: 624 FY	C-C NSW			W S P	G W - C	EVILDESIG	N Version	14.06						PAGE	1

↑ FILE: 624_EX-C.WSW

W S P G W - CIVILDESIGN Version 14.06

Program Package Serial Number: 1841 WATER SURFACE PROFILE LISTING

Date: 5-31-2019 Time:11:29:17

"3111 MANCHESTER" HYDRAULICS Prepared By: URBAN RESOURCE CORPORATION

Filename: 624_EX-C.wsw Detention Outlet - 24° CMP

*****	********** Invert	********** Depth	********* Water	(*************************************	******* Vel	*******] Vel	******** Energy		•	********* Flow Top		:		No W	
Station	Elev	(FT)	Elev	(CFS)	(FPS) - ~] bead]-	Grd.El.	Elev	Depth	Width	DiaFT	or I.D.	ZI. 	Prs/	Pip
L/Elem ********	Ch Slope	*****	*****	******	******	SF Ave		SE Dpth	Froude N	Norm Dp *******	"N" ******	X-Fall	ZR ****	Type	
1000.000	7.530	1.491	9.821	17.10	6. 81	.72	9.74	. 20	1,49	1.74	2.006	.000	.00	1	.0
.723	.0998	 - -				 .0190	.01	1.49	1.00	2.00	.022	.60	. 90	PIPE	
1000,723	7.537	1.563	9.100	17.10	6.49 -	.65 l	9.75	.00] 1.49 	l 1,65 	1 2.000 - ∽	.000	.00	1	.0
2.894			- •	 -	- - : 	.0171	.85	1.56	.91	2.00	.022	.80	.00	PIPE	
1003.617	7.566 	1.643	9,209	17.10	6.19 	.69.]	9.80	.00	, 	1,53 	2.000 -	.eee. 	.00	1 -	.0
б.77 8	, 2298					.0156	.11	1.64	.81	2.00	.022	.00	.00	PIPE	
1010.395	7.632		9.369	17.10 	5.90 	.54 	9.91	.09 	i 1.49	1.35 	2.000	.000 	.00	1 !-	.0
14.367	.0898	!1	- •	·• -	- * [,0145	.21	1.74	.71	2.00	.022	.00	.96	PIPE	
1024.763	7.774	1.854	9.627	17.10	5 .6 3	.49 	10.12	.60	' 1.49 	1.84 -	`2.000 	.000	.80	_1 ⊧-	.0
23.250		· · · · · · · · · · · · · · · · · · ·				.0148	. 34	1.85	.58 I	2.00 I	. 022 I	.00	.00	PIPE	
1048.013	8.003	2.000	10.003	17.10	5.44	ٰ 46۔ ا -	10.46	.00	' 1.49 	1	2.000 	.000	,99	}-	.8
21.057 WALL EN1	.0098 FRANCE	: •	,	'	•	.0159	.33	2.00	.90	2.00	. 022	.00	. 96	PIPE	
1069.070	8.210	2.137 	10.347 -	17.18 	5.44 	-45 	18.81	.00	 1.49 	 00 	! 2.000 	.080	. 20 -	ø -	,0

↑ FILE: 624_EX-C.WSW

W S P G N - CIVILDESIGN Version 14.06

Program Package Serial Number: 1841

WATER SURFACE PROFILE LISTING

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"3111 MANCHESTER" HYDRAULICS

624_EX-C.OUT

Prepared By: URBAN RESOURCE CORPORATION

Detertion Dutlet - 24" CMP Filename: 624 EX-C.wsw

			Detention	Outlet - 2	4" CMP		Filena	me: 624_	EX-C.WSW	******	*******	******	*****	*****	**
Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.		Critical Depth	Flow Top Width	Height/ DiaFT	Base WL	ZL	No Wt) Prs/Pi	
- L/Elem ********	- Ch Slope *******	 ********	******	 ********	************************************	SF Ave	- HF ********	- SE Opth ******	- Froude N *******	Norm Dp	"N" ******	X-fall ******	ZR ****	Type (
1980.800	7.530	₃,495 	9.025 	 17.29 	6.83 	. 7 2	9.75	 .00 	1.49	1.74	2.000	.000	.00 -	1 .	. 0
.726	- 4698				• - [.6191	.01	1.49	1.00	2.00	.022		.00	PIPE	
1990.726	7.537	1.568	9.105	17.20	6.51	. 66	9.76	.80	1.49	1.65	2.000	000,	.00	<u>'</u> 1.	.0
2,908	- - 8 690. 	- 	 	}• -i I :	i	! .0172	.95	1.57	.91 .91	2.00	.022	: .ee 		PIPE	
1003.534	7.566	1.649	9.215	17,20	6.21)	,60	9,81	.89	1.49	1.52	2,000	.000	.00 -	1 . [-	.0
6.785	.6998	-		l" ";		,0157	.11	1.65	.81	2.00	.022	. 90	.09	PIPE	
1010.418	7.633	1.,743	9.376	! 17.20	5,92	.54	9.92	.00	1.49	1.34	2.000	. B00	.00	1 2 .	.0
14.454	- - - - -) - -			.0147	.21	1.74	 .71	2.00	.022	.00	.00	PIPE	
1024.872	7.775	1.863] 9.637	17.20	5.64	.49	10.13	.00	1.49	1.01	2.000		.00	¦ 3 .	.0
21.239	- - 8690,)	 		.0149	.32	1.86	,57	2.00	.022	.00	.80	PIPÉ	
1046.111	7.984) 2 .00 0	9.984	1 17.20	5. 4 7	.47	10.45	.00	1.49	.00	2,660	888	.00	[1.	.0
22.959		-	-	-		 0161	.37	2.80	.00	2.00	.022	.80	r	PIPE	
WALL EN	TRANCE I	ı	ŀ	I		!		I		-	ļ	I		l	
1069.070				17.20	5.47	.47 	10.83	.ee 	1,49	.00	2.000	.000	.00	9 .	.0
*	1 - 4_EX-C.WSW	r	r	•			SIGN Versi			•	•	•	•	PAGE	1,
# 1 XLL. 02	cx" c ; M3N		Program	Package 5	erial Num	ber: 184					Date: 5-	31-2019	Time:1	1:29:1	7
				TER" HYDRAL : URBAN RES	JLICS				Ø						
		F*3		Outlet - 3		******		me: 624_	EX-C.wsw	****	******	****	****	*****	×*
*****	Invert	Depth	Water	Q	Ve)	Vel	Energy		Critical Depth	Flow Top Width				jNo Wth Prs/P:	
Station ~	4	(FT) 	Elev	(CF5) 	(FPS) 			j	j	ļ	j	-			
{/Clem ******	Ch 5lope	 *******	[********	******	******	SF Ave	HF *******	SE Dpth ******	Froude N	Norm Dp	"N" ******	X-Fall ******	2R *****	Type (
1000.000		1.499	9.029	17.30	6.85	,73	9.76	.08	1.50	1.73	2.0 0 0	.000	. 69	1 .	.0
- -726	.0098		-	i	 	.0192	.01	1.50	•	2.00	 .022	.00	.00	PIPE	
1000.726	7.537	1.572	9.109	17,30	6.53	.66	9.77	.00	1.50	1.64	2.000	080	, 00	1.	.0
-	-		-	[- ~		- -	l	-	-	-	l ~	

								624 EX	X-C.OUT						
2,899	.0098					.0173	,05	1.57	.91	2.00	.022	.00	.00	PTPE	
1	i	1	, L			[- 1				202		1	
1003.625	7.566	1.654	9.220	17.30	6.23	.68	9.82	. 99	1.50	1.51	2.000	.000	.00	1	.8
- -		-1-	- -	- -	- -	- [-	.11	1.65	 .81	2.80	- ~ ~ ,022	.00	- ,0 0	PIPE	
6.758	.0098		t	ŧ		.0158	. 4.4	1,07	101	2.00	1 1	.00	,00	1	
1010.383	7.632	1.749	9.381	17.30	5.94	.55	9.93	.00	1,50	1.32	2.000	.000	.99	` ı	. 0
1616.303		- -	-1-	-1-	-1-	-1-	- -	-1						-	
14.503	. 9998	+	'	ı	•	.0148	.22	1.75	.71	2.00	.022	.00	.00	PTPF	
111,703		1	ŀ	1		[- 1	1			ı		1	
1024.887	7.775	1.871	9.646	17.30	5.66	.50	10.14	.00	1.50	.98	2.000	.000	.99	. 1	.0
- -	-	-1-	- -	- -	- -	- -								-	
19.398	.0098					.0151	.29	1.87	.57	2.68	.822	.00	. 99	PIPE	
	i		0.055	"			10.44	ا ۵۵	1,50	.00	2,088	. 000	.88	: ,	. 8
1044.284	7.966	2.999	9.966	17.30	5.51	.47 - -	10.44	.00 -							. 0
- -		- -	- -	- -	[.0162	,40	2.99	.00	2.88	.022	.00	. 90	PIPE	
24.786	.0098					.0302	,40	2.00	.00	00		• 45	,,,,		
WALL ENTE	KAUNCE .			1		1	ı					1		Ł	
	!	!		- " "		I	40.05	۱ ۵۵	1 50	20	3 000	.086	.00	i a	.0
1069.070	8.210	2.171	10.381	17.30	5.51	.47	10.85	.00	1.50	.00	2.000	.000	.00	. 0	
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↑ ↑ FILE: 624_EX-C.NSW

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W S P G W - CIVILDESIGN Version 14.06 Program Package Serial Number: 1841

WATER SURFACE PROFILE LISTING

Date: 5-31-2019 Time:11:29:17

"3111 MANCHESTER" HYDRAULICS
Prepared By: URBAN RESOURCE CORPORATION
Detention Outlet - 24" CMP

Filename: 624_EX-C.wsw

******	******	*****	******	*****	******	*****	******	******	******	*****	*****	*****	****	****	***
	Invert	Depth	Water	Q	Vel	Vel	Energy		:	Flow Top				No W	
Station	Elev	(FT)	Elev	(CFS)	(FP\$)	Head	Grd.El.	Elev	Depth	Woudtin	DlaFI	or I.D.	ZL	Prs/I	rip
L/Elem	Ch Slope	-	-			SF Ave	HF			Norm Dp *******		X-Fall		 Type ****	
******	********	*****	[####################################	*****	******	*****	*****	*****	******	*******	+ * * + * * +	******	*****	1 *****	• • •
1000.000	7.530				6.87	.73	9.77	.00	1,50	1.73	2.000	.000 	r .	1	.0
.729	.0098	[- 	 	[1	iì· ·	 .0193	.03	 1.50	1	2. 0 9	.022	 .00	.00	PIPE	
1000.729	7.537		9.114	 17,49 	6.55	.67	9.78	, ae }	1,50	1.63	 2.000 -	,000	.00	' 1 -	.0
2.915	.0098	1 .	t			.0174	. 85	1.58		2.00	.022	,00	.00	PIPE	
1003.644	7.566		_		6.24	. 61	9.83	.00	1.50	1,50	2.260	.000 	.90	1	.0
6.814	.0098				[-	.0159	.11	1.66	•	2,00	.022	.00	.00	PIPE	
1010.458	7.633				5.95	.55	9.94	.00	1.50	1.31	2.009	.080 - ~		1	. 0
14.630	.0098		- 1	[]		.0150	.22	1.76		2.00	 .022	.00	.00	PIPE	
1025.088	7.777				5.68	.50	10,16	.00	1.50	,95	2.600	.209 	, p/e	1	ю.
- 17.473	.0098]	 ,	-	.0153	.27	1.88		2.08	.022	.80	.90	PIPE	
1042,562	7,949	2.000) 9.949	l 17.40	5.54	.48	10.43	.00	1.50	96,	1 2.000	.269	.00	1	.0

26,508 WALL EN	.0098				-	.0164	 .44		X-C.OUT .00	 2.00	 .022	.00		PIPE
1059.876			 10.398 	 17.40 	5.54 -	.48	30.87 	.00	1.50 	,00 	2.000 	.990	.00	@ .0 -
FILE: 62	24 <u></u> EX-C.WSW	"31:	11 MANCHES	Package Se FER" HYDRAU	rial Numb WATER S ULICS	er: 184 SURFACE	PROFILE LÏ		9	ı	Date: 5-	31-2619	Time:1	PAGE 1 1:29:17
		Pi		: URBAN RES Outlet - 2		RPORATIO	N Filenan	e: 624_,	EX-C.wsw	*****	*****	*****	*****	*****
********* Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth			Base Wt]or I.D.	Zl.	No Wth Prs/Pip
- L/Elem ******	Ch 5lope	*****	*****	******	******	SF Ave	- HF *#*****	SE Dpth ******	Froude N	Norm Dp	"N" ******	X-Fall ******	ZR *****	Type Ch
1000.000			9.037	 17.50 	6.89	.74	9.77 J	.00	1.51	 1,72 -	1 2.000	.006	.00 .1	1 .0
.724	.0098	-	[I	j	-	- .0194 	.01	1.51	1.00	2.00	.022 	.80	.90	PIPE
1000.724		1.581	9.118	17.50	6.57	.67 -	9,79	.00	1.51	` 1.63 	2.000 		•	1 .0
2.903	8998	1	1			.0175	,85	1.58	.90	2,00	.022	.00.	96.	PIPE 1 .0
	-		9.230	17.50 	6.26	.61 - 0160	9.84 .11	.00 - 1.66	1.51 .81	1.49 2.00	2,660] ,022	.000	.98 - .98	1 .0 - PIPE
6.779	1	1.762	9.394	17.50	5.97	.55	9.95	.00	1.51	1.30	2.008	.000	 68.	1 .8
	.]	•	-		}-	- - 19151	22	1.76	.70	2.80	.022	.90	- .00	PIPE
1025.101				17.50	5.69]-	.50 	10.17 i	.00	 1.51 	 .91 	2.000 	.000	.00 -	1 .0 1-
15.80	· (- 3 .0098 - I	1	[;-		.0155	. 24	1.89	' .55 	2.00	.022	.00 	I	PIPE
	· - ·		9.933 -	17.50 	5.57 -				1.51	.00 	2.000	886. ; 60.	.00 - [- 80	1 .0 - PIPE
28,166 WALL EN		1	F	; 1		.0166	.47	2.00	.00	2.00	.022	.ee.	.00	1
1069.076			10.415 -	17.50 -	5.57 -	.48 -	18.98	.00	1.51 	' .00 	, 2.000 	.000 		' ø .e -
FILE: 6	24,_EX-C.WSi	1	Program	W S Package Se	eríal Numt	ber: 184	IGN Versi 1 PROFILE LI				Nate: 5-	31-2019	Time:	PAGE 1
			repared By	TER" HYDRAL : URBAN RES Outlet - 2	JI,TCS GOURCE COF		N		0 EX-C.WSW		www. 7			

| Invert | Depth | Water | Q | Vel Vel | Energy | Super | Critical | Flow Top | Height | Base Wt | No Wth

									X-C.OUT						
Station	Elev	(FT)	Elev	(CFS)	(FPS)	Head	Grd.EI.	Elev	Depth	Width -	Dia,-FT	or I.D.	Z! 	Prs/P	1p
	- Ch Slope			- 当完全宗教教育选择		SF Ave			Froude N	Norm Dp	*N" *******	X-Fall ******	ZR *****	1ype ****	
*****	******	******	******	354564734	******	******	****	1							
1800.800	7.530		9.041	17,60	6.91 	.74	9,78	.00	1,51	1.72	2,000	.089	.00	1 -	.0
.716	.0998		-	 :	• • 	.0195	.01	1.51		2.00	_e22	.99	.09 	PIPE	
1000.716	7.537	1.586	9,123	17.60	6.59	.67	9.80	.00	1.51	1.62	2.899	.969	.00		.0
- 2.9 6 6	- .0098		-]!		.0176	.05	1.59	.90	2,00	.022	.96	.09	PIPE	
1003.623	7,566		9.235	17.60	5,28	.61	9.85	00	1.51	1.49	2.889	.000	.260 -	1. 1.	. ø
. 6. 781	.0098	-	-	-	 -	.0162	.11	1.67	.81	2,00	.022	.90	.00	PIPE	
1010.403	7.632		9.401	17.60	5.99 [.56	9.96	, øe	1.51	1,28	 2.000 	.000	.00	, 1	.0
14.793	.0098		ļ- -	-	[) ,	.0153	. 23	1.77	 .78	2.09	.022	. 80	. 80	PIPE	
1025.196	7.778		9.677	17.60	 5.71 	.51	10.18	.0e 	1.51 -	.88 	2.000 -	.000	,80 -	1	.0
14.123	.0098	-	[-	- 	i* * 	.0157	.22	1.90		2.00	.022	.66 !		PIPE	
1039.319	7.917		9,917	17.68		.49	10.40	.00	1.51		2.000 -	.080		1	.8
29.750	. 0098				1!] .0168	.50	2.00		2.00	i- ~ .022	.89	.00	PIPE	
WALL EN	FRANCE												1	ı	
								1	1	1 00	1 2.000	.499	.89	i 6	а
1059.070	8.210 -		10.433	17.60	5.69 	- 49 	10.92	.09 	1.51 	.00 			-	-	. 17

↑ ↑ FILE: 624_EX-C.WSW

W S P G W - CIVILDESIGN Version 14.06

Program Package Serial Number: 1841 WATER SURFACE PROFILE LISTING

Date: 5-31-2019 Time:11:29:17

PAGE

"3111 MANCHESTER" HYDRAULICS
Prepared By: URBAN RESOURCE CORPORATION
Detention Outlet - 24" CMP

Filename: 624 EX-C.wsw

L/Flem Ch Slope SF Ave HF SE Dpth Froude N Norm Dp "N" X-Fall 2R Type Ch	******	*****	*****	*****		******	*******		Defeuriou			
C/CIER [Cit STOPE]									1			Station
		Norm Dp	- Froude N ******	SE Doth	- FiF FiF 	- SF Ave &*****	*****	*****	*****	******		,
1000.000 7.530 1.513 9.043 17.63 6.92 .74 9.79 .00 1.51 1.72 2.000 .000 .00 1 .0			1.51				. 1			1.513	7.530	1000.000
.725 .0098 .01 1.51 1.00 2.00 .022 .00 .00 PIPE	.00 .00 PIPE	2.99 .022	1.00	1.51	.01	.0195					.0098	.725
1000.725 7.537 1.587 9.124 17.05 0.35	.00 1 .0	1.62 2.000	1.51	.00	9.86					1.587	7.537	1000.725
- -	.00 .00 PIPE	2.08 .022	.90	1.59	 05			-	ļ- -	-	~ 8 900.	2.897
1003.622 7.566 1.671 9.237 17.63 6.29 .61 9.85 .00 1.51 1.48 2.000 .000 .00 1 .6		1.48 2.000	1.51	00 -	9.85							

								624_EX	(-C.OUT						
6,814	.0098					.0162	.11	1.67	.81	2.00	. 022	.60	.00	PIPE	
1				1				- 1							_
1010.436	7.633	1.770	9,403	17.63	5.99	.56	9.96	.00	1.51	1.28	2.000	.000	. 99	. 1	. В
-1-	- -					- -		-						-	
14.869	.0098					.0153	.23	1.77	.70	2.00	.022	.00	. 88	PIPE	
1	!		}	}				i	4 54		I , ,,,, i	000	. 20	i ,	.0
1025,305	7.779	1.902	9.681	17.63	5.71	.51	10.19	.00	1.51	,86	2.000 	.000 		1_	.0
-1-	-	-	- } -	-]-	- -	- -	-1-	1.90	. 53	2.00	I∵ - .022	.00	. 99	PIPE	
13.554	.0098	,		1		.0157	.21	1.90		2.00	1 1	.00	. 00	1 11 2	
1		- 440	~ ^*	17 63	5 .61	.49	10.40	.00	1.51	.60	2.000	. 000	.00	1	.8
1038.860	7.913	2.000	9.913	17.63	- -	- -	10.40	-1			4			: -	
- -		-1-	-1-	-1"	+1+	.0159	.51	2.00	. 99 '	2.00	.022	.96	.00	PIPE	
30.210 WALL ENTRA	.0098					10102		2,00		-100					
WALL ENTRA	: !	1	1	1		1		- 1	1		1 1	1			
1069.070	8.210	2.228	10.438	17,63	5.61	.49	10.93	.00	1,51	. 60	2.000	.000	.00	9	, Ø
-1-		-1-	- -	- -	- -	- -	- -	- []		-	-	
•	'	1	'	'	•	'		•							
♠ FILE: 624 E	X-C.NSW			WSP	6 W - C	IVILDESIG	N Version	14.06						PAGE	1

↑ FILE: 624_EX-C.WSW

W S P G W - CIVILDESIGN Version 14.06

Program Package Serial Number: 1841 WATER SURFACE PROFILE LISTING

Date: 5-31-2019 Time:11:29:17

"3111 MANCHESTER" HYDRAULICS
Prepared By: URBAN RESOURCE CORPORATION
Detention Outlet - 24" CMP

Filename: 624_EX-C.wsw

*******		*****	******	*****	****	****	*******	******	******	******	******	******	*****	*****	***
.,,,.	Invert	Depth	Water	1 o 1	Vel	Vel	Energy	Super	Critical	Flow Top	Height/	Base Wt	1	No M	:h
Station	Elev	(FT)	Flev	(CFS)	(FPS)	Head	Grd.E1.			Width				Prs/F	¹1p
		i- ` ` -i				j				-					
L/Elem	Ch Slope	i i		i i		SF Ave			Froude N		"N"	X-Fall		Type	
*****	******	******	*****	*******	*****	******	****	****	******	******	******	*****	****	****	***
	l						0 MB	İ	١	1	2 000	.088	.00	· •	.0
1000.000	7.530		9.043	17.64	6.92	.74	9.79	.00	1.51	1,72 	2.000 -			i	.0
						 - 0195	.01	1,51	1.00	2.00	.022	.00		PIPE	
.720	.0098					10127		ł 2.52	1	1	1		1	1	
1000.720	1 7,537	1.588	9.125	17.64	6,60	.68	9.80	.00	1.51	1.62	2.000	. 889	.00	່ 1	.0
												j	-	-	
2.914	. 6698					.0177	.05	1.59	.90	2.00	,022	. 88	.00	PIPE	
		. !		J										1	_
1003.634	7.566	1.672	9,238	17.64	6.29	.61	9.85	.00	1.51	1.48	2.000	.000	.00	. 1	.0
- 1		ii								j	•	 .00	. 20	PIPE	
6.796	.0998					.0162	.11	1.67	.81	2.00	.022	.00	1	l LTLE	
1010.430	7.633	1,771	9.404	: 17.64	6.00	.56	9.96	.09	1.51	1,27	2.000	.000	.98	3	.ø
1016.430	/.833 								_		-			-	
14.892	.0098	F - 1		;	r	.0153	.23	1.77	.70	2.00	. 022	.00		PIPE	
	1	l 1		!				1	1	1	;]	1	
1025.323	7.779	1.903	9,683	17.64	5.72	.51	10.19	.00	1.51	. 86	2.000	.008	. 20	1	,0
-1		i									•			-	
13.382	.0098					.0157	.21	1.98	. 53	2.00	. 022	.00	.00	PTPE	
		!I				ا	40.40	F	١	1	1 000	,000	.90	4	æ.
1038.705	7.911	2.000	9.911	17.64	5.61	.49	10.40	.00	1.51	.00 	2.000			! _	.0
70 755	~ ~	!				 0159	.51	2.00	•	2,80	.022	.89	.00	PIPE	
30.365 WALL ENT	.0098 					. 0103	.71	2.00	100	F.00		.00	.00		
FEMALE C17	LIVEUR E	! :		1		ı		!	ı	l	1				
	ı	: 1				,			•	-	-	•			

624_EX-C.OUT .000 .00 .000. 1069.070 8.210 2.230 10.449 17.64 5.61 .49 10.93 .00 1.51 .00 2.000

PAGE 1

Date: 5-31-2019 Time:11:29:17

♣ FILE: 624_EX-C.WSW W S P G W - CIVILDESIGN Version 14.06 Program Package Serial Number: 1841

WATER SURFACE PROFILE LISTING

"3111 MANCHESTER" HYDRAULICS

Prepared By: URBAN RESOURCE CORPORATION
Detention Outlet - 24" CMP Filename: 624 EX-C.wsw

			Detention	. ~ J917UU	29 LMP *******	*****	*******	*******	EA-C.7938	******	*****	*****	****	****	**
~ * * * * * * * * * * * * * * * * * * *	Invert	Depth	Water	0	Vel	Vel	Energy	Super	Critical	Flow Top	Height/	Base Wt	1	No Wt!	h
Station	Elev	(FT)	Elev	(CFS)	(FPS)	Head	Grd.El.	£Jev	Depth	Width	DiaFT	or I.D.	Z.t.	Prs/P	ip
-					!						 "N"	- X-Fall	 ZR	Type (c h
	Ch Slope		*****	******	[SF Ave	HF		Froude N ******		{V ×******	******** ******	****	, 21	**
**********	****	*****	******	******	[~~*****				1		! !	 		i	
1000.000	7.530	1.514	9,844	17,65	6.92	.74	9.79	.00	1.51	1.72	2.889	.080	.00	1 .	.0
1000.000					i		-			•			-	-	
.730	.0098			-	_	. 0195	.01	1.51	1.00	2,00	.022	.88	.98	PIPE	
	1			47.65			9.80	.00	1.51	1,62	1 2.0 0 0	.000 .000	.00	1	. 0
1000.730	7.537	1.589	9.126	17.65	6,60 	. 68								į-	
2.926	 	-	-			. 0177	.05	1.59	1	2,00	.022	.00		PIPE	
E. 1 / A. U	1		ł	I	1	1)		1	
1003.656	7.566	1.673	9.239	17.65	6.29	.61	9.85	.09	1.51	1.48	2.000	.000	.00	1 .	.0
-	ļ					•				•	.022	 .00	.08 -	PIPE	
6.823	.0098		1	ı		.01.62	.11	1.67	.89	2.00	.922 I	99,	1 69.	F	
1010.479	1 7.633	1.772	9.405	17.65	6.00	.56	9.96	.00	1.51	1.27	2,000	.000	.00	ia.	.0
	- -												-	-	
14,980		1	1	'		.0153	.23	1.77	.69	2.09	.022	.00	.00	PIPE	
	!				1			١	l					1	
1025.459		1.905	9.686	17.65		.51	10.19	.00	1.51	.85	2,000 	.000	.89	1 .	.0
- 13.102	•			-		.0158	.21	1.91		2,00	.022	.89	.00	PIPE	
13,182		:	ı	I	1	10250		1	1	1		'""		1	
1038,561	7.910	2.000	9.910	17.65	5.62	.49	10.48	.00	1.51	.00	2.000	.000	.00	1	.0
-	[-		J -	l						[-	
38.509	.0098					. 0169	.52	2.80	.00	2,00	.022	.00	.69	PIPE	
MYLL EN.	TRANCE	:	ı I	ı	Į.	1		ŀ	I	ı	ı		I	ŧ	
1069.070	8,210	2,231	10.441	17.65	5.62	.49	10.93	.00	1.51	.00	2.000	.000	.80	'е .	.0
						1	-						-	ļ-	

624 EX-D.EDT

WATER SURFACE PROFILE - TITLE CARD LISTING HEADING LINE NO 1 IS - "3111 MANCHESTER" HYDRAULICS 0 HEADING LINE NO 2 IS - Prepared By: URBAN RESOURCE CORPORATION HEADING LINE NO 3 IS - Determin Outlet - 18" CMP													X-D.EL	F 1						
CARD SECT CHN NO OF AVE PIER HEIGHT 1 BASE ZL ZR INV Y(1) Y(2) Y(3) Y(4) Y(5) Y(6) Y(7) Y(8) Y(9) Y(3) Y(4) Y(5) Y(6) Y(7) Y(8) Y(9) Y(3) Y(4) Y(5) Y(6) Y(7) Y(8) Y(9) Y(3) Y(4) Y(5) Y(6) Y(7) Y(8) Y(9) Y(3) Y(4) Y(5) Y(6) Y(7) Y(8) Y(9) Y(3) Y(4) Y(5) Y(6) Y(7) Y(8) Y(9) Y(3) Y(4) Y(5) Y(6) Y(7) Y(8) Y(9) Y(3) Y(4) Y(5) Y(6) Y(7) Y(8) Y(9) Y(3) Y(4) Y(5) Y(6) Y(7) Y(8) Y(9) Y(3) Y(4) Y(5) Y(6) Y(7) Y(8) Y(9) Y(3) Y(4) Y(5) Y(6) Y(7) Y(8) Y(9) Y(3) Y(4) Y(5) Y(6) Y(7) Y(8) Y(9) Y(3) Y(4) Y(5) Y(6) Y(7) Y(8) Y(9) Y(3) Y(4) Y(5) Y(6) Y(7) Y(8) Y(9) Y(3) Y(4) Y(5) Y(6) Y(7) Y(8) Y(9) Y(3) Y(4) Y(5) Y(6) Y(7) Y(8) Y(9) Y(3) Y(4) Y(5) Y(6) Y(7) Y(8) Y(9) Y(3) Y(4) Y(5) Y(6) Y(7) Y(8) Y(9) Y(3) Y(4) Y(5) Y(6) Y(7) Y(8) Y(9) Y(3) Y(4) Y(5) Y(6) Y(7) Y(8) Y(7) Y(8) Y(9) Y(3) Y(4) Y(5) Y(6) Y(7) Y(8) Y(9) Y(3) Y(4) Y(5) Y(6) Y(7) Y(8) Y(9) Y(3) Y(4) Y(5) Y(6) Y(7) Y(8) Y(9) Y(3) Y(4) Y(5) Y(6) Y(7) Y(8) Y(8) Y(8) Y(8) Y(8) Y(8) Y(8) Y(8	FILE:	624 EX	-D.WS	W			WSP	6 W - E	EDIT !	LISTING	- Vers	ion 14	.06			Date:	5-31-2	2019		
CARD SECT CHN NO OF AVE PIER HEIGHT 1 BASE ZL ZR INV Y(1) Y(2) Y(3) Y(4) Y(5) Y(6) Y(7) Y(8) Y(9) Y(3) Y(4) Y(5) Y(6) Y(7) Y(8) Y(9) Y(3) Y(4) Y(5) Y(6) Y(7) Y(8) Y(9) Y(3) Y(4) Y(5) Y(6) Y(7) Y(8) Y(9) Y(3) Y(4) Y(5) Y(6) Y(7) Y(8) Y(9) Y(3) Y(4) Y(5) Y(6) Y(7) Y(8) Y(9) Y(3) Y(4) Y(5) Y(6) Y(7) Y(8) Y(9) Y(3) Y(4) Y(5) Y(6) Y(7) Y(8) Y(9) Y(3) Y(4) Y(5) Y(6) Y(7) Y(8) Y(9) Y(3) Y(4) Y(5) Y(6) Y(7) Y(8) Y(9) Y(3) Y(4) Y(5) Y(6) Y(7) Y(8) Y(9) Y(3) Y(4) Y(5) Y(6) Y(7) Y(8) Y(9) Y(3) Y(4) Y(5) Y(6) Y(7) Y(8) Y(9) Y(3) Y(4) Y(5) Y(6) Y(7) Y(8) Y(9) Y(3) Y(4) Y(5) Y(6) Y(7) Y(8) Y(9) Y(3) Y(4) Y(5) Y(6) Y(7) Y(8) Y(9) Y(3) Y(4) Y(5) Y(6) Y(7) Y(8) Y(9) Y(3) Y(4) Y(5) Y(6) Y(7) Y(8) Y(7) Y(8) Y(9) Y(3) Y(4) Y(5) Y(6) Y(7) Y(8) Y(8) Y(8) Y(8) Y(8) Y(8) Y(8) Y(8	1					MА	TER SURF	ACE PROP	FILE .	- CHANNE	L DEFI	NITION	LISTI	NG						
CODE NO TYPE PIER/PIP WIDTH DIAMETER WIDTH DROP CD 1 4 1 1 2.900 CD 2 4 1 1.500 CD 3 4 1 1.500 WAS P G W WAS P G W HEADING LINE NO 1 IS - "3111 MANCHESTER" HYDRAULICS Prepared By: URBAN RESOURCE CORPORATION HEADING LINE NO 3 IS - Detention Outlet - 18" CMP	CARD	SECT	CHN	Nic	O DE AVE I					INV	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD 1 4 1 2.000 CD 2 4 1 1.500 CD 3 4 1 1.500 CD 3 4 1 1.500 WATER SURFACE PROFILE - TITLE CARD LISTING HEADING LINE NO 1 IS - "3111 MANCHESTER" HYDRAULICS 0 HEADING LINE NO 2 IS - Prepared By: URBAN RESOURCE CORPORATION HEADING LINE NO 3 IS - Determino Outlet - 18" CMP		-						u			• •									
CD 2 4 1 1.500 CD 3 4 1 1 1.500 CD 3 4 1 1 1.000 W S P G W PAGE NO CODE	ND	1114	F 3.1	CHIPPER WAD	iii ozraici															
CD 2 4 1 1.500 CD 3 4 1 1 1.500 CD 3 4 1 1 1.000 W S P G W PAGE NO CD.	1	1		1	2 989															
PAGE NO		2	7																	
W S P G W WATER SURFACE PROFILE - TITLE CARD LISTING		2	1		4															
HEADING LINE NO 1 IS - HEADING LINE NO 2 IS - HEADING LINE NO 3 IS - Prepared By: URBAN RESOURCE CORPORATION HEADING LINE NO 3 IS - Detention Outlet - 18" CMP	CD	3	4		4	2.000		F. C	S P G	W									PAGE NO	1
HEADING LINE NO 1 IS - HEADING LINE NO 2 IS - HEADING LINE NO 3 IS - Prepared By: URBAN RESCURCE CORPORATION HEADING LINE NO 3 IS - Detention Outlet - 18" CMP					FIV.	TED CHDEACE	9 17 2090		•											
## ## ## ## ## ## ## ## ## ## ## ## ##	454551	Thi		**		TER SUNFACE	radrick.	" 111LL	CARD	21311140										
HEADING LINE NO 2 IS -	HEAUTI	NG LINE	PH. L	. 15		"7511 MANCUE	CTCD! UV	DOMESTICS						а						
Prepared By: URBAN RESOURCE CORPORATION						SILL PANCAE	SIEK ITT	prototitus	3					•						
Deterrition Outlet - 18" CMP	HEADI	G LINE	NO Z	15			UDDAN E	ccounce	casa	ABATTAN										
Detention Outlet - 18" CMP						Prepared By:	UKBAN K	FZORKEE	CORP	URALL LOW										
W S P G W	HEADI	VG LINE	NO 3	15				nu cus				624	CV.D							
WATER SURFACE PROFILE ELEMENT CARD LISTING						Detention Ou	tiet - 1				TTGUSE	W: 024	_EX-9.	M-2M					DAGE NO	o 2
ELEMENT NO																			E MERIT DE	, ₂
U/S DATA STATION INVERT SECT W S ELEV 1000.000 8.070 2 8.070									NT CA	KD [1711	NG									
1000.000 8.070 2	ELEM	ENT NO	1 I	SA	SYSTEM OU															
ELEMENT NO 2 IS A REACH * * * * * * * * * * * * * * * * * * *					U/S DATA	STATION		SECT						W						
U/S DATA STATION INVERT SECT N RADIUS ANGLE ANG PT M/S DATA STATION INVERT SECT N RADIUS ANGLE ANG PT M/S DATA STATION INVERT SECT FP U/S DATA STATION INVERT SECT FP U/S DATA STATION INVERT SECT FP U/S DATA STATION INVERT SECT M/S ELEV						1000.000									8.07	0				
1068.080 8.940 2 .022 .000 .000 .000 .000 .000 .000	E L EM	ON THE	2 I	5 A	REACH	*	*	*												
ELEMENT NO 3 IS A WALL ENTRANCE U/S DATA STATION INVERT SECT FP 1068.080 8.940 2 .022 ELEMENT NO 4 IS A SYSTEM HEADWORKS U/S DATA STATION INVERT SECT W S ELEV					U/S DATA	STATION	INVERT	SECT												
U/S DATA STATION INVERT SECT FP 1068.080 8.940 2 .022 ELEMENT NO 4 IS A SYSTEM HEADWORKS * * U/S DATA STATION INVERT SECT W S ELEV						1068,080	8.940	2			022				-	99 9	.000	•	.000	8
U/S DATA STATION INVERT SECT FP 1068.080 8.940 2 .022 ELEMENT NO 4 IS A SYSTEM HEADWORKS * * U/S DATA STATION INVERT SECT W S ELEV	ELEM	ENT NO	3 Î	5 A	WALL EN	TRANCE		*												
ELEMENT NO 4 IS A SYSTEM HEADWORKS U/S DATA STATION INVERT SECT * W S ELEV					U/S DATA	STATION	INVERT	SECT		F	P									
U/S DATA STATION INVERT SECT W S ELEV					••	1068.080	8.940	2			022									
U/S DATA STATION INVERT SECT ₩ S ELEV	FIFM	ON THE	4 F	SA	SYSTEM HE			*				*								
0) 2 477.77 2.137.4014 2.114.17 4.22.	~ b- b- 10	110		- ^			INVERT	SECT						M	s elev					
LOUDIOUS VIPTO -					3, 2 87.7										8,940					
						,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	5.540	_												

624_EX-D.OUT

W S P G W - CIVILDESIGN Version 14.06 Program Package Serial Number: 1841 WATER SURFACE PROFILE LISTING ♠ FILE: 624_EX-D.WSW

"3111 MANCHESTER" HYDRAULICS
Prepared By: URBAN RESOURCE CORPORATION

Prepared By: URBAN RESOURCE CORPORATION Detention Outlet - 12" CMP Filename: 624_EX-D.wsw															
******	*****	*****	*****	**********	********** Um3	vel	Energy	enerneen 1 Cunne	lenitarios Ienitarios	Flow Top	Mojeht/	Raco ldt	1	No Wit	h.
Station	Invert Elev	Depth (FT)	Water Elev	(CFS)	Vel (FPS)	Head	Grd.El.			Width			ŽL	Prs/P	
314(10)	1	- "		- (0.3)	-					-	-	-	j- <i>-</i>	i .	•
L/Elem	Ch Slope	1		:	i '	\$F Ave	₩F	SE Opth	Froude N	Norm Dp	"N"	X-Fall	ZR	Туре	
******	*******	******	******	******	*****	******	*******	*****	****	******	****	*****	****	****	**
	1	1		l .								l]	1	
1000.000	8.070	1.024	9.094	7.00	5,45	.45	9.55	.09	1.02	1.40	1,500	.000	.00	1.	.0
	•		-					- 1.02	1.09	1.23	.022	 - 00	08	PIPE	
. 654	.0128		l	ı	ı	.0183	.01	1.02	1.65	1.23	1022	.00	1	1	
1000.654	8.078	1.070	9,148	7.00	5,19	.42	9.57	.00	1.02	1.35	1.500	.000	.ee	1	.e
								l				i		1-	
3.141	•	,	ı	r		.8164	.05	1,67	.92	1.23	.022	168	.00	PIPE	
	1					l	l		J	ŀ		!	l	1	
1003.795	8.118	1.119	9.238	7.00	4.95	.38	9.62	. 98	1.02	1.31	1.500	.000	.00	. 1	.0
					[1				l	۱۰	1-	
10.155	.0128		ı			.8147	.15	1.12	. 84	1.23	.022	.00	. 98	PIPE	
4047 000	1		0.474	7.00	4,72	.35	9.77	.08	1.02	1.24	1.500	.000	. 99	1	. 8
1013.950		1.173 	9,421	7.00						1			ı	1_	
49,015]		F" "		.0133	.65	1.17	.76	1.23	.022	.00	.99	PIPE	
49.013	1	1 1		ŧ			l .02	1	1			1	1	1	
1062.965	8.875	1.226	10.101	7.00	4,53	،32	10.42	.00	1.02	1.16	1.500	.000	.00	1	.0
							-		i	ļ	-		-	-	
5.115						.0126	. 26	1.23	. 69	1,23	.022	.00	.00	PIPS	
WALL EN	TRANCE														
	1								l					1	_
1068.080		1.227	10.167	7.00	4.52	.32	10.48	.00	1.02	1.16	1.500	.080	.00		.0
	-		-	-						i	i		I -	-	
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		Pr	, ,	: URBAN RES		RPORATIO									
			Detention	Outlet - 3	8" CMP		Filena	ne: 624_1	EX-D.WSW	***				***	
*******	*****	*******	********		1/_5	**************************************		errananas. Langue		leine To-	l Wadabet /		······································	No Wt	h h
Station	Invert Elev	Depth (FT)	Water Elev	Q (CF\$)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	critica; Depth	Flow Top Width		or I.D.		Prs/P	
2 ractou	1	(F#/ 		[(Gra) 	\[r\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\									1.13/1.	- 1
1.753	ich char		_		-1	CE Avo	uc	CE DATE	Enoudo M	Mone De	n _{al} ei	V	70	Tuna	Ch

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	Invert	Depth	Water	Q	Vel	Vel	Energy	Super	Critical	Flow Top	Height/	Base Wt	i	No Wt	h
Station	Elev	(FT)	Elev	(CFS)	(FPS)	Head	Grd.€1.	Elev	Depth	Width	DiaFT	or I.D.	ZL	Prs/P	'ip
1/Elem	- Ch Slooe					5F Ave	 HF	SE Doth	 Froude N	- Norm Do	 "N" -	· X-Fall	zr	Type	ſħ
	*********	{*******	*****	*****	*****	******	*****		*****					*****	
Ì	İ	ĺ			İ]	1	1			1	_
1000.000	8,070		9.331 	7.50	5.61	.49	9.62	.08	1.06	1,37	1.500	.0 0 0	.00	1	.0
.638	,0128		[1	-	-	.0192	.81	1.06	1.00	1.36	.022	, 86	.69	PIPE	
1	l	-						!	1		E		1		
1000.638	8.078	1.109	9.187	7.50	5.35	.44	9.63	.00	1.06	1.32	1.500	.000	.00	1	.0
- 9	-	ļ					-	- "					-	-	

								624_EX	(-D.OUT						
2.865	.0128					.0172	.05	1.11	. 91	1.36	.022	.00	.00	PIPE	
1	1	I	1	1			ŧ				1			l	
1003.503	8.115	1.163	9.277	7.50	5.10	.42	9.68	.00	1.06	1.25	1.500	. 000	.00	, 1	.0
- -	-!-	- -	- -	.	- -	- -		- [•		-			j -	
8.123	.0128					.0155	.13	1.16	.83	1.36	.022	.00	.00	PIPE	
1]	1	Í					E .	l		J I			1	
1011.626	8.219	1.222	9.440	7.50	4.87	.37	9.81	.89	1.06	1,17	1.500	. 000	.00	. 1	.0
	-1-	[- -	- -	- -	- -	-1-	-1			!r ! -	- -		-	
25.295	.0128					.0141	. 36	1.22	.75	1.36	. 022	.00	.00	PIPE	
1		- 1					- 1							1	
1036.920	8.542	1.290	9.832	7.50	4.64	.33	18.17	. 09	1.05	1.04	1.500	.000	.00	1.	.0
- -	- -	- -	- -	- -	-1-	-]	-1-	-	,		-	-!^		1-	
31.160	.0128					.0133	.42	1.29	.66	1.36	.022	.00	.00	PIPE	
WALL ENTRA	NCE .														
	1			[1			ارمما		1	
1068.080	8.940	1.320	10.260	7.50	4.55	.32	18,58	.00	1.06	.97	1.500	.000	.09	. 0	.0
- -	-1-	- -	- -	- -	- į -	-1-	- -	~		-	-	-1-		1-	

* FILE: 624_EX-D.WSW

W S P G W - CIVILDESIGN Version 14.06

Program Package Serial Number: 1841

WATER SURFACE PROFILE LISTING

Date: 5-31-2019 Time:11:29:29

PAGE 1

"3111 MANCHESTER" HYDRAULICS

Prepared By: URBAN RESOURCE CORPORATION

Detention Outlet - 18" CMP Filename: 624_EX-D.wsw

******	*******	*******	*****	*****	*****	*****	*****	*****	*****	****	*****	******	****	*****
	Invert	Depth	Water	Q	Vel	Vel	Energy	Super	Critical	Flow Too	Height/	Base Wt		No With
Station	Elev	(FT)	Elev	(CFS)	(FP5)	Head	Grd.El.	Elev	Depth	Width	Dia. FT	or I.D.	ŽL	Prs/Pip
-		i ` - i			- ~	j			j	ļ. <i>-</i>	ļ			
L/Elem	Ch Slope	i i			·	SF Ave	HF	SE Doth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
******	******	*******	******	******	*****	*****	****	*****	*****	原准验证表示法	****	*****	****	*****
j	ì	i i		i	j	į				ĺ		!		
1000.000	8.970	1.096	9,166	8.00	5.78	.52	9.69	.00	1.10	1.33	1.500	.000	.88	1 .8
-	i			-	1]-						ļ	-	-
.614	.0128			•		6292	.01	1.10	1.00	1.50	.022	.89	.89	PIPE
	l		1			- 1		1		1	ŀ			1
1002.614	8.078	1.147	9,225	8.00	5.52	.47	9.70	.00	1.10	1.27	1.500	.000	.00	1 .0
-			i	i- - !	-	1-							-	-
2.681	.0128					.0182	.05	1.15	.91	1.50	.022	. 20	.00	PIPE
!		[]				1								l
1003.295	8.112	1.205	9.317	8.60	5.26	.43	9.75	.00	1.10	1.19	1.500	.000	.00	1 .0
+ j						[-							-	-
7.046	.0128					0165	.12	1.20	.82	1.50	.022	.00	.00	PIPE
							i							
1010.341	8.202	1.270	9.472	8.90	5.01	.39	9.86	.00	1.10	1.68	1.560	.999	.00	1 .0
- į		[]			-									-
17.689	.0128					.0152	, 27	1.27	.73	1.50	.022	.60	.00	PIPE
]	Į.	1		1]						I
1028.829	8.428	1.348	9.776	8.00	4,78	.35	10.13	.00	1.10	.91	1.500	.000	.00	1.0
-	-		!											ļ -
40.851	.0128					.0146	.59	1.35	.62	1.50	-022	.00	.00	PIPE
WALL ENT	FRANCE													_
			Į.											
1068.080	8.948	1.453	10.393	8.00	4.57	. 32	10.72	.00	1.10	. 52	1.500	.009	.00	. 9 .9
-	-			1		-				-	-	-	-	-

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624_EX-D.OUT

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Program Package Serial Number: 1841

WATER SURFACE PROFILE LISTING

"3111 MANCHESTER" HYDRAULICS
Prepared By: URBAN RESOURCE CORPORATION
Detention Outlet - 18" CMP Filename: 624_EX-D.wsw

			perention	Outlet	EG CPR			40. 024_1		*****	****	*****	*****	*****	**
*************************************	**************************************	********* Depth	********* Water	L&*********	******** Vel	Vel	Energy	Super	Crîtical	Flow Top	Height/	Base Wt		No Wt	h
Station	Elev	(FT)	Elev	(CFS)	(FPS)	Head	Grd.£].	Elev	Depth	Width		or I.D.		Prs/P	ĺР
1 /57				- "		SF Ave]- " HF	- SE Doth	 Froude N	- v Norm Dn	"N"	- X-Fall	zr	Type	Ch
L/Elem *******	Ch Slope *******	******	*****	******	 ******		*****	*****	******		****		****	****	**
		[]	0.450	0.05	5.80	.52	9.69	.00	1.10	1.33	1,589	.000	.99	1	. 0
1000.060	8,070	1.099	9,169	8.05						-				-	
.610	.0128					.0203	.91	1.10	1.00	1.50	.022	.20	. 88.	PIPE	
1600.610	8.078	1.151	9,229	8.05	5 .5 3	,48	9.70	.00	1,10	1,27	1.500	.089	.80	1	,ø
-									•	·			- 00	PIPE	
2.658	.0328	;	1	Į.	ı	.0183	.05 !	1.15	,91 	1.50	. 022	.00	.00	PJPE	
1003.268	8.112	1.209	9.321	8.05	5.27	.43	9.75	.00	1.10	1.19	1.500	.000	.88	1	.0
						.0166	- - .12	1.21	.82 .	1.50	.022	.00	- J - 99	PIPE	
6.978	.0128 	1				.0100	114	1.22	1				ĺ	1	
1010.246	8.201	1.275	9.476	8.05	5.03	. 39	9.87	.00	1.10	1.07	1.500	.000	.09	1	.0
17.255	1 .0128					.0153	.26	1.27	,73	1.50	.022	.00	.00	PIPE	
]]			34	10.13	1	7.10]	1.500	.000	.88	1	. 0
1027.501	8.421	1.354	9.776 	8.05	4.79 -	.36		.00 -	1.10 	.89 				-	
48.346	.0128	1				.0150	.69	1.35	.61	1.50	.022	.00	.00	PIPE	
1067.847	8.937	1.475	10.412	8.05	4.57	,32	10.74	.80	1.10	.38	1.500	.099	.99	1	.ø
									1		-			-	
.233						. 0152	.09	1.48	.38	1.50	,022	.00	, 99	PIPE	
WAUL EN	FRANCE	I			1		l	1]			'		Į.	
1068.080	B.940	1.477	10.417	8.05	4.57	.32	18.74	.00	1.10	.37	1.500	.000		Ø 1	.0
*	-							1-	-	1	1		•	'	
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			Program	Package Se			PROFILE L	ISTING			Date: 5-	31-2019	Time:1	1:29:2	9
			11 MANCHEST		JLIC5				9						
		Pi	repared By: Detention	: URBAN RE! Outlet - 1		RPORATIO	ON Filena	me: 624_I	EX-D.wsw						
******	******	*****	*****	********	***********	******	*****	*****	*****	*****	******	******	*****	*****	**
Charles	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Ve] Head	Energy Grd.El.			Flow Top Width				No Wt Prs/P	
Station ~		: ' '	~ -	- (CF3)				j	ļ- · -	j	j		-	· [·
L/Elem	Ch Slope	 ********		*****	*******	SF Ave	∺******* *********	SE Dpth ******	Froude N	Norm Dp *******	j "N" 4*****	X-Fall ******	ZR *****	[****	Ch ∗∗∗
******					1									į	
1000.000	8.070	1.100	9.170	8.05	5.81	.52		.00	1.10	1.33	1.500	.009	.00 	1	. 8
. 609		[-		1" -	l]	- .0203	.01	1.10	1.80	1.50	.622	.09		PIPE	

								624_E	X-D.OUT				,		
1000.609	6.078	1.152	9.236	8.86	5.54	.48	9,71	.00	1,10	1.27 	 1.500 	.000		1 1 1-	.0
2,655	-	- -	- -	- -		.0183 _,	.05	1.15		1.50	.022	.00	•		
1003.265	B.112	1.210	9.321	8.96	5.28	.43	9.75	. 69	1.10	1.19 	1.589	.000		1 -	.0
- 6.950	.8128	- -	-[-		- -	.0166	.12	1.21		1.50	.022	.00	•	PIPE	
1010.215	8.201	1.276	9.476	8.86	5.03	. 39	9.87	.08	1.10	1.07	1.500	.898		1.	.0
17.184	.0128	- -	-1-	-1-	-] -	.0153	.26	1.28	•	1,50	 .022	. 20	,	,	
1027.399	8.420	1.355	9.775	8.06 _.	4.80	.36	10.13	.00	1.10	.89	1.500	.000		1.	.0
- 39.788		- [~	- -	-i-	- -	.0151	.60	1.36		1.50	.022	.00	.89	PIPE	
1067.187	8.929	1.478	10.407	8.96	4.57	.32	10.73	.00	1.10	.36	1.500	.000		1	.0
- - 893	- .0128	- [-	-1-	- -	- -	- - .0153	- - .01	1.48		1.50	.022	.00	•	PIPE	
WALL ENT	RANCE		l	1		1	ŀ		l .		[]		1		_
1068.080	8.940 - -	1.482	10.422 - -	8.06 - -	4.57 - -	.32 - -	10.75 - -	.00	1.10 	.33 [1.500 	.0 0 0		- -	.0

* FILE: 624_EX-D.WSW

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Program Package Serial Number: 1841 WATER SURFACE PROFILE LISTING

Date: 5-31-2019 Time:11:29:29

"3111 MANCHESTER" HYDRAULICS
Prepared By: URBAN RESOURCE CORPORATION
Detention Outlet - 18" CMP

Filename: 624_EX-D.wsw

*******	******	*******	*****	*******	*******	******	******	*****	*****	*****	*****	*****	*****	*****	**
Station	Invert El e v	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Head Vel	Energy Grd.El.		Critical Depth	Flow Yop Width		Base Wt or I.D.		No Wt Prs/P	
t/Elem	Ch Slope	******		 	- *******	" - SF Ave	- HF *******	 SE Dpth	- Froude N ******	 Nora Dp *******	- "N" ******	X-Fall *****	- ZR *****	Type	Ch **
1000.000						.52		.08	1.10		1.500	.986		1	. 0
.615	.0128	 -]-	 -	 	.0203	.01	1.10	•	1.50	[.022 I	 ,89 	.00 .00	PIPE	
1000.615	8.078			8.07 		.48		.00 	1.10	1.27 	1.500	.000 	.ee -	-	.0
2.689	. 0128		•	· 	· !	.0183	.05	1.15		1.50	.022 	. ea	l		
1003.295		1.211		8.07 						,	,	.600	1-	-	.0
6.943	.0128		0.478	8.07	5.03	.0156 .39		1.21	.82 1.10	1.50	.022 1.500	.00	1	PIPE 	.0
1010.238 - 17.167	8.201 .0128									 1.50		- i-	-	-	
1027.465	8.420	1.357	9.777	 8.07	4.80	.36	10.13	.00	1.10	.88	1.500	.000	1	1	.0
. 1		1		I					[- <u>-</u>			j	i –	ļ ~	

							624_EX-		1.50	.022	. 00	.00	PIPE	
39.306 .0128					.0152	.60	1.36	.61	1.50	1 1	.00		1	
1066.711 8.923	1.483	10.405	8.07	4.58	.33	10.73	.00	1.10	.32	1.500	.000	.00	, 1	.0
- -	- -	-1-	- -	- -	- -	- -		1		-	- -	00	n TOE	
1.369 .0128					.0156	.02	1.48	.34	1.50	.022	.88	.00	PIPE	
WALL ENTRANCE								1		1 1	l l		ı	
	ì	12.122			.32	10.75	, 9 0	1.10	. 27	1.500	. 200	.00	. 9	. 0
1058.080 8.940	1,488	10,428	8.07 - -	4.57	-34	10.75	-1-	1		11-	- -		ļ.,	
-[]-	- -	- -	-1-	- "	-:-		,			'			•	

* FILE: 624_EX-D.WSW

W S P G W - CTVILDESIGN Version 14.06

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Program Package Serial Number: 1841

WATER SURFACE PROFILE LISTING

Date: 5-31-2019 Time:11:29:29

"3311 MANCHESTER" HYDRAULICS Prepared By: URBAN RESOURCE CORPORATION

Detention Outlet - 18" CMP Filename: 624_EX-D.Wsw

**************************************	r≠≠≠≠≠×××× Invert Elev	********* Depth (FT)	********** Water Elev	********** Q (CF.5)	**************************************	Vel Head	********** Energy Grd.El.			********* Flow Top Width				No Wt	
-	- Ch Slope *******	******	*****	- ******]: ==*****	SF Ave	######################################	 SE Dpth ******	- Froude N ******	- Norm Dp *******	 "N" +*****	X-Fall ******	 ZR *****	Type ****	
1008.000	8.070	1,101	9.171	 	5.81	.52	9.70 	.02	1.10 	1,33 [1.500 [.000 	 00 -	1	, θ
.623	.0128		~ ~ ~	;		. 0203	.01	1.10	1.00	1,50	.022	.00	.00	PIPE	
1000,623	8.078		9.232	8.08 	5.54	.48	9.71	.00	' 1.10 -	1.26 	` 1.500 	.000	.00	1	.0
2.660		 ,	•	1 -1		, 6 183	.65	1.15	.91	1.50 !	.022	.00 	.00		
1003.283	8.112		9.324	8.68 	5,28	.43	9.76	.09	' 1.10 	` 1,18 - ^	1.500 -	_000	.00	1	.0
6.945	,0128	[]		- " 	[.0167	.12	1.21	.82 I	1.50	.022	.00	.00	PIPE	
1010.228	1 8.201		9.479	8.08 	5.04	. 39	9.87	.00	1.10	1.07 	1.500	.009 	.00	1	.0
17.098	- " .0128	 i		- 	- 1	.0154	.26	′ 3.28 l	.72 I	` 1.50 !	022	.00 	. 20	PIPE	
1027.326	8.419	1.358	9.777		4.89	.36	1.0.14	.00	1.10 		1.50 0	.000	.00	1 -	.0
38.619	1	· •		' ' L I	,	.0153	.59	1.36	, 61. I	1.50	.022	.00	.00	PIPE	
1065.945	8.913	1.487	10.399	8.68	4.58	.33	10.72 	.00].10 	.28 -	1.500	.000	.00	1	.8
2.135 WALL EN	.0128	, ,			•	.0159	.03	1.49	.32	1,50	. 022	.88	.69	PIPE	
1068.080	8.940	1.495	10.435	8.08 	4.57 	. 32	 10.76 	. 90 	 1.10] 18 	1.500 	.000	 .00 -	 - -	.0

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N S P G W - CIVILDESIGN Version 14.06

Program Package Serial Number: 1841

WATER SURFACE PROFILE LISTING

Date: 5-31-2019 Time:11:29:29

PAGE 1

"3111 MANCHESTER" HYDRAULICS Prepared By: URBAN RESOURCE CORPORATION

南部水平水平水平水	表示电离子字章专字单 :	****	*******	******	*****	*****		****	***	• • • • • • • • • • • • • • • • • • • •					
Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	4 " 4	Critical Depth	Flow Top Width		Base Wt or I.D.		No Wt Prs/P	
L/Elem ********	- Ch Slope ********	******	*****	******	******	SF Ave	HF *******	SE Doth	Froude N ******	Norm Dp ******	******	X-Fall	ZR ++++	Туре *****	
1009.008	8,070	1.102	9.172	8.09	5.82	.53	9.70	.00	i.10	1.32	1.500	.000	.00	1 1	.0
.611	.0128				1	.0204	.61	1.10		[1.50	.022	.00		PIPE	
1000.611	8.678	1.154	9.232	8.09	5.54	.48	9.71	.00	1.10	1.26	1.500	.886	.00	1	8.
2.654	 				· 	.0184	.05	1.15	.91	1.50	.022	.08	.00	PIPE	
1003.265	8.112	1.212	9.324	8.69	5.29	.43	9.76	.00	1.10	1.18	1.500	.000	.00] -	.0
6.908	.0128			 	- 	.0167	.12	1.21		1.50	.022	.00	.00	PIPE -	
1010.174	8.2 00	1.279	9,479	8.09	5,04	.39	9.87	.00	1.10	1.06	1.500	.000	.00	1	.8
- 16.972	.0128			 	·	.0154	.26	1.28		1.50	.022	.08	.08	PIPE	
1027.146	8.417	1.359	9.776	8.09	4.81	. 36	18.13	00	1.10	.88	1.500	.000	.00	1	.0
37.891	.0128				 -	.0154	.58	1.36	61	1,50	.022	.00	.00	PIPE	
1065.036	 8.991	1.490	10.391	8.09	4.58	. 33	18.72	00	1.10	. 25	1.500	.000	.00	1	.0
3.044	.e128	[-1	.0158	 .05	1.49	.30	1.50	.022	.00	.00	PIPE	
WALL EN	TRANCE			,			ı	4	ı	ı	г	i i		1	
1068.080	8.940	1.491	10.431	8.09	4.58	.33	10.76	.00	1.10	. 24	1.500	.000	.98	9	.0
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			repared By:	URBAN RES	OURCE CO	RPORATIO		me: 624	-						
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Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Ve). Head	Energy Grd.El.	Elev	Depth	Flow Top Width		8ase Wt or I.D.		No Wt Prs/P	
L/Elem	- Ch Slope				-	5F Ave	HF	SE Doth	- Froude N	Norm Dp	"N"	X-Fall	ZR	Туре	Ch
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1999.009	8,070 -	1.102	9.172	8.10	5.82	-53 	9.70 	.00	1.10	1.32	1.500 	L	.08	1	.0
.614	.0128	, ; 	·	· ! !	,	.0204	.01	` 1.10		1.50	.022	.00	.00	PIPE	
1809.514	8.078	1.155	9.233	8.10	5.55	.48	9.71	.øø 	1.10	1.25	1.500	.000	.00	1 -	s.
2,654	.0128	1 -:	'		•	0184	.05	1.15	.91	1.50	.022	.00		PIPE	

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1003.268			9.325		5.29	.43	9.76	.09	1.10		1.500	.000		1	.0
- -	- -	- -	- i -		- -	- -	- -		-] - .022	.00	99	PIPË	
6.888	.0128			1		.0167	.12	1.21	.82	1.50	.022 I I	.66	.00	F 24 2	
2010 255	9 200	+ 700	9.479	8.10	5.04	.39	9.87	.00	1.10	1.86	1.588	.000	.88	1	s.
1010.156	8.200	1.280	9.4/5	- -	-1-		- -				[-			-	
- - 15.922	,0128	-1-		- 1		.0154	.26	1.28	.72 `	1.50		.00		PIPE	
1				l		1	ŀ	[1		,				
1027.077	8.416	1,360	9.776		4.81	.36	18.14	.00	1.10	. 27	1.500	.000	.00		.0
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36.607	6128					.0156	.57	1.36	.61	1.50	.022	.00	.89	PIPË	
1112 555	2 221	1 405	40.370	0.10	4 50	.33	10.71	.00	1,10	.17	1.500	. eee	80	; 1	. в
1063.685	8.884	1,495	10.379		4.58						-			ļ-	
1.376	- - . 61 28	-1-	- -	- -		.0160	.02	1.50	.25	1.50	,022	.00	.00	PIPE	
1.576	.0128	!	I	1		1	1	1	1			1		ŀ	
1065.061	8.901	1.500	10.401	8.10	4.58	.33	10.73	.69	1.10	.00	1.500	.000	.98	1	. છ
-1-	- -		-] -	-] -	- -	- -	- -	-			- - -	•		-	
3.019	.0128					.0164	.05	1.50	.00	1.50	.022	.00	.00	PIPE	
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CARD	SECT	CHN			PIER HEIGH			ZL	ZR		Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
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114.002,0			~~		Prepared By:	HERAN	RESOI	IRCE C	CORPO	RATION										
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				1.	ATER SURFACE	DROSTIE	- FI				is.									
Er Charl	UT NO	1 7		SYSTEM C		FROTILE	*	*	CMIS											
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Program Package Serial Number: 1841
WATER SURFACE PROFILE LISTING

"3111 MANCHESTER" HYDRAULICS

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Date: 5-31-2019 Time:11:29:41

Prepared By: URBAN RESOURCE CORPORATION

Detention Outlet - 18" CMP Filename: 624_EX-E.wsw

		r	Detention			*********		me: 624_	EX-E.wsw	*****	*****	****	*****	******	6 *
Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.		Critical Depth	Flow Top Width		Base Wt or I.D.		No Wt	
L/Elem *4******		******	*****	******	******	 SF Ave ******	- HF *******	- SE Dpth ******	Froude N	Norm Do	"N"	- X~Fall ******	ZR *****	Type (
1000.000	8.380 	.986 - -	9.366 	6.50	5.28 	.43	9.80	.ee 	.99 	1.42 i	1.500	.000 	.00	 1 . -	. 0
.401	.0293			•	' 	.0175	.01	.99 I		1.50	.022	.99	.00	PIPE	
1000.401	8,384	1.029 -	9.412	6.50	5.e3 	. 39	9,81	.90 	' .99 	1.39	1.500	.000	.00	1 .	.0
1,628	.8 89 3	' ' I I	· •	•	•	.0156	.03	1.03	.92	1.50	.022	. 90	. 69 .	PIPE	
1002.028	8,399 -	1.075 	9.474	6,50	4.80	.36	9.83	.89 	.99	1.35	1.500	. 999 -	.00	`1 . -	.0
3.723	.0693		·			.0140	. 05	1.07	.84	1.50	.022	.00	.00	PIPE	
1085.751	8.434	1.125 	9.558	6.50	4.57	.32	9.88	.00 	,99 	1.30	1.500	.000 	.00	1-	.0
7.833	.0693	t 1			 :	.0125	.10	1.12 I	.77 1	1.50	.022	.00	.00	PIPE	
1013.584	8.507 	1.179 -	9.686 -	6,50	4,36 	.30	9.98	',29 	.99 	1.23	1.500	.009	.00	'1. -	.0
17.145	.0893	l 	: 1		!	.0113	.19	1.18	.70 	1.50	.022	.60		PIPE	
1030.730	8.655	1.241 	3.927 	6.50	4.16	.27 	10.18	.00 	' ,9 9 	1.13	1.500	.609	.00	'1. -	.0
35.820 WALL ENT	.0893]	1			.0104	.37	1.24	,62	1.50	.022	.00		PIPE	
1056.550	9,000	1.302	10.302	6,50	3.99	.25	10.55	.00	,99	1.02	1,508	.000	.00	1 8 .	. 8
1000.336														1-	
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*****	*******	*****	Detention *****	Outlet - 1	18" CMP +*****	*****	Filena: ******	ne: 624_ *******	EX-E.WSW 6*******	******	*****	*****	*****	*****	1 %
Station		Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.		Critical Depth	Flow Top Width				No With Prs/Pi	
- L/Elem *******	Ch Slope	 	******	*****	******	SF Ave		SE Opth ******	Froude N	- Norm Dp ******	"N"	X-Fall	ZR ****	Type (.h :*
1998.668	8.38 0	 .994	9,374	6.60	5.31	.44	9.81	.09	.99	1.42	1.500	 	.08	1.	. Ø

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.403	.0093					.0177	.01	.99	1.00	1.50	.022	.00	.00	PIPE	
1000.403	8.384	1.037	9,421	6.68		.48	9.82 -!	.00	.99	1.39	1.500	. ୧୫୭		1	.0
1.609	.0093	-1-		- j ·	[-	.0158	.03	1.04	.92	 1.50 	 ,022			PIPE	
1002.012	8.399	1.084	9.482			.36	9.84	' 00. 	, 99	1.34 	1.500 	.000		1	.8
- l 3.767	.0093	- ; -	-	- j·		.0141	.95	1.08	.84	1.50	.022	.00			
1005.719	8.433	1.134	9.567		4.60	.33	9.90	. 69. 	, 99	1,29	1.580	.000	.00	1	.0
7.678	.0093	- -	.	- -	-	.0127	.10	1.13	.77		.022	.00			
1013.397		1.190		6.60	4.39	.30	9.99 -	.ee. -	.99	1.21 	 1.500 	.000	.00	1	.0
-(16.499	.0093	-[-	· - -	- -	,-	.0115	.19	1.19	.78	1.50	.022	.00			
1029.896	8.659	1.253	9.912		4.19	. 27	10.18	.00	.99	1.11	1.500	.999	.00	1	. 0
36.654	.0093	- -	-1-	-	,-	.0106	.39	1.25	.62	1.50	.022	.00	.00	PIPE	
WALL ENT	1]		1						!	1	-		1	
1066.550	9.000 ~	1.322	10.322 - -	6.60 - -	4.00 -	.25 - -	10.57 - -		 		1,500 	.000 	.00 -	[- 8	.0

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Prepared By: URBAN RESOURCE CORPORATION

Detention Outlet - 18" EMP Filename: 624 EX-E.wsw Vel Invert Depth Vel Energy | Super | Critical | Flow Top | Height / | Base Wt £lev (FT) Elev (CFS) (FPS) Head Grd.El. | Elev | Depth | Width | Dia.-FT or I.D. | ZL Prs/Pip Station L/Elem Ch 5lope SF Avel | ISE Doth | Froude N | Norm Do | X-Fall ZR Type Ch 1000.000 1.001 .44 9.83 .00 1.00 1.500 .00 8.386 9.381 6.70 5.35 2.41 . 888 1 ,0 .495 .0179 1.00 1.00 .0093 .01 1.50 .00 PIPE 1.045 5.20 1000.405 8.384 9.429 6.70 .40 9.83 .00 1.00 1.38 1.500 .000 .00 1 .0 1.592 .0093 .0159 .03 1.05 1.50 . 622 .00 .00 PIPE 1001.997 1.092 9,491 .37 8.399 5.70 4.86 9.86 1.00 1.500 .000 1 3.673 .0093 .0143 .05 1.89 .022 1.50 .60 .00 PIPE 1005.671 1.144 9.577 6.70 9.91 1.00 8.433 4,63 .33 .00 1.28 1.500 .000 . 99 1 7.593 .0093 .0128 .10 .022 .88 PIPE .00 1013.262 1.00 8.504 1,201 9.704 6.70 4.42 .30 10.01 .00 1.20 1.500 .088 .00 1 .0

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	15.955	.0093	,	•	,	•	.0116	.19	1.20	-69	1.50	.022	.00	.00	PIPE	
	13.375	.0055	i	1	1		· · · · · ·	I	1	- 1			ļ			
1	e29.217 [°]	8,652	1.265	9.918	6.70	4.21	.28	10.19	.00	1.00	1.09	1.509	.000	. 90	. 1	₩.
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	37.333	.0093	·				.0107	.40	1.27	.61	1.50	.022	.00	, 00	PIPE	
lad.	ALL ENTRA	KCE.														
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1	066.550	9.000	1.343	10.343	5.70	4.01	. 25	10.59	.00	1.00	. 92	1.500	.000	.00	. 0	.0
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WATER SURFACE PROFILE LISTING

Date: 5-31-2019 Time:11:29:41

"3111 MANCHESTER" HYDRAULICS

Prepared By: URBAN RESOURCE CORPORATION

Filename: 624_EX-E.wsw

Detention Outlet - 18" CMP **************** Energy | Super |Critical|Flow Top|Height/|Base Wt| Vel Depth | vel Water Invert Grd.El. | Elev | Depth | Width | Dia.-FT or I.D. | ZL |Prs/Pip (FPS) Head Elev (CF5) Elev Station |SE Dpth Froude N Norm Op | [X-Fall ZR Type Ch SF Ave 1/Elem Ch Slope ****** *** ***** ****** ****** ****** ******* 1.500 9.86 .00 1.02 1.9 1.024 5.45 .46 1000.000 8.380 .022 .00 PIPE 1.00 1,50 .0183 .01 .493 1.500 . 280 .00 1 9.87 1000.403 8.384 1.070 9,453 7.00 5.19 .42 .00 .00 PIPE .0164 .03 1.07 ,92 1.50 .022 1.603 .0093 9.90.00 1.02 1.500 1 .38 1002.006 8.399 1.119 9.518 7.00 4.95 .022 .00 PIPE .0147 .∂5 1.50 3,635 .0093 9.95 .00 1.02 1.500 .000 .00 1 7.00 4.72 .35 1005,641 8.433 1,173 9.606 .00 PIPE ,0133 .18 1.50 .022 .00 7.345 ,0093 .006 .00 10.05 .00 1.02 1.500 1 7.00 4.50 .31 1,15 1012.985 8.501 1.234 9.735 .0121 .022 .00 PIPE .18 1.50 .0093 14.860 1.500 . 29 10.23 .00 1.62 1.01 .000 .00 1.304 7.00 4.29 1027.845 8.639 1.30 .622 .00 PIPE .35 . 60 1.50 .0113 31.330 .0093 .00 10.58 .00 1.62 1,500 .000 1 1.393 10.324 4,09 .26 1059.175 8.931 7.00 .00 PIPE .022 .00 1.50 7.375 ,0110 .08 1.39 .0093 WALL ENTRANCE 10.67 1.02 .71 1.500 .000 .00 0 1.410 10.410 7.00 4.06 .26 . 69 1066,550 9.000

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WATER SURFACE PROFILE LISTING

"3111 MANCHESTER" HYDRAULICS

Prepared By: URBAN RESOURCE CORPORATION Filename: 624_EX-E.wsw Detention Outlet - 18" CMP Energy | Super |Critical|Flow Top|Height/|Base Wt| Vel Vel. Depth Invert Grd.El. | Elev | Depth | Width | Dia. - FT or I.D. | ZL | Prs/Pip (CFS) (FPS) Head Elev Elev (FY) Station | |SE Doth Froude N Norm Do | "N" X-Fall ZR SF Ave L/Elem |Ch Slope ***** ****** 基型实施资本未要本 | 表示水水水水水水 .000 .00 1 1.03 1.39 1.500 .47 9.88 .00 1.032 9.412 7.10 5.48 1000.000 8.380 1.00 .00 PIPE .0185 .01 1.03 1.50 .622 .410 .0093 .00 1.03 1.35 1.500 .000 1 9.89 1.078 7.10 5.22 .42 9.462 1000.410 8.384 .00 PIPE . 03 1.08 1.50 .022 .00 .0165 .0093 1.618 1.03 1.30 1.500 .000 . 00 1 4.98 . 39 9.91 .00 8.399 1.128 9.527 7.10 1002.028 .00 PIPE .0149 1.50 . 05 1,13 .0093 3.624 000 .00 . 35 9.97 . 80 1.03 1.500 1 1005.652 8.433 1.183 9.616 7.10 4,75 .00 PIPE .00 .0134 .10 1.18 .76 1.50 .0093 7.319 1.500 . 000 . 60 3 10.06 .00 1.03 1.13 4.53 .32 1,245 9,746 7.10 1012.971 8.501 .00 PIPE .00 .68 1.50 .0123 .18 1.25 14.626 .0093 .000 .00 , 29 10.24 .00 1.03 1.500 1 7.10 4.32 1027.596 8,637 1.318 9.955 .00 PIPE .622 .00 .0116 .35 1.32 30.277 .0093 .000 .00 .26 10.59 .08 1.03 1.500 3 10.331 4.12 1057.874 8.919 1.412 7.10 .00 .00 PIPE . 46 1.50 .022 .0113 .18 1.41 8.676 .0093 WALL ENTRANCE 1.03 .000 .00 0 10.69 .00 .61 1.500 4.98 . 26 1066.550 9.000 1.435 10.435 W S P G W - CIVILDESIGN Version 14.06 PAGE ★ FILE: 624_EX-E.WSW Program Package Serial Number: 1841 Date: 5-31-2019 Time:11:29:41 WATER SURFACE PROFILE LISTING "3111 MANCHESTER" HYDRAULICS Prepared By: URBAN RESOURCE CORPORATION Filename: 624 EX-E.wsw

Betention Outlet - 18" CMP

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L/Elem Ch Slope		SF SF	Ave HF SE Dpt	h Froude N Norm Dp "N	i" X-fall ZR Type Ch

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1002.008		1.129	9.527	7.11	4.98	.39	9.91	.00 	1.03 	1.29 	1.500	.000	.00	1	.0
3.637	•		1	! ·		,0149	' .85	1.13	.84 I	1.50	.022	.00 !	. 99. I	PIPE	
1005.645			9.617		4.75	.35		.00	' 1.03 	1.22	1.590 -	.000		1-	.0
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1027.478	_		9.955	7.11	4.32	.29	10.24	.00 -	1.03	' .98 	1.500	.000		`1 -	.0
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624 FX-E.OUT

PAGE 1

↑ FILE: 624_EX-E.WSW

W S P G W - CIVILDESIGN Version 14.06

Program Package Serial Number: 1841

WATER SURFACE PROFILE LISTING

Date: 5-31-2019 Time:11:29:41

"3111 MANCHESTER" HYDRAULICS
Prepared By: URBAN RESOURCE CORPORATION
Detention Outlet - 18" CMP

Detention Gutlet - 18" CMP Filename: 524_EX-E. USW Filename: 524_EX-E.														*****
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	Invert	Depth	Water	Q	Vel	Vel	Energy					or I.D.	:	Prs/Pip
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L/Elem	Ch Slope		-		<u> </u>	SF Ave	HF	SE Opth	Froude N	Norm Dp	- "N"	X-Fall	ZR	Type Ch
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1000,000	8.380	1.033	9.413	7.12	5.49	.47	9.88	.00	1.03	1.39	1.500	. 096	.08	1 .0
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,402	. 2093					.0185	.01	1,03	1.00	1.50	.822	.00	.00	PIPE
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1000.402	8.384	1.079	9.463	7.12	5.23	.42	9.89	.00	1.03	1.35	1.500	.000	.69	1 .0
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1.506	.0093					.0166	.03	1.08	.92	1.50	.022	.00	.00	PIPE
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1002.008	8.399	1.130	9.528	7.12	4.99	.39	9.91	.00	1.03	1.29	1.500	.000	.00	1 .0

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7.296	.0093						.0135	.10	1.18	.76	1.50	.622	. 60	.60	F	
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1012.920			1.247	9.747	7.12	4,53	. 32	10.07	.00 -						ļ.~	- •
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	8.63		1.320	9.955	- -	4.32		- -	-		-	i			į -	
50.053	1	- -	- -	- -	-1-		.0116	.35	1.32	.59	1,50	.022	.88			
29.953	.0093		!		- 1		.0110	1.33	1	1.77	1	1	1		1	
ጎመርቱ ኃራለ	8.91	, !	1,415	10.329	7.12	4.12	. 26	10.59	.00	1.03	.69	1.500	.000	.00	່ 1	.8
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↑ FILE: 624_EX-E.WSW

W S P G W - CIVILDESIGN Version 14.06

Program Package Serial Number: 1841
WATER SURFACE PROFILE LISTING

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"3111 MANCHESTER" HYDRAULICS 0
Prepared By: URBAN RESOURCE CORPORATION
Detention Outlet - 18" CMP Filename: 624_EX-E.wsw

安安安公本企义者或从重要人名意大义完全人来与女者专业者专业者专业者专业者专业者中国中华中国中国的一种,中国的 Energy | Super |Critical|Flow Top|Height/|Base Wt| Depth | | Vel VeJ. Water Invert Grd.El. Elev | Depth | Width | Dia.-FT or I.D. | ZL Prs/Pip (CFS) | (FPS) Head Elev (FT) Elev Station HF SE Dpth Froude N Norm Dp | "N" | X-Fall | ZR Type Ch SF Ave L/Elem |Ch Slope **** .00 1.03 1.39 1.500 .000 .00 1 .0 8.389 5.49 9.88 1000,000

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1000.401	8.384	1.080	9.464	7.13	5.23	.43	9.89	.00	1.03	1.35	1.500	.096	.00	. 1	,0
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1.610	.0093					.0155	.03	1.08	.92	1.50	.022	.80	.09	PIPE	
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1002.011	8.399	1.139	9.529	7.13	4.99	.39	9.92	.00	1.03	1.29	1.500	.000	.00	. 1	.0
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3.615	,0093	,				.0149	.05	1.13	. 84	1.50	.022	.00	.99	PIPE	
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1005.626	8.432	1.186	9.618	7.13	4.76	.35	9.97	.00	1.03	1,22	1.500	.000	.00	. 1	.0
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1012.909	8.500	1.248	9.748	7.13	4.54	.32	10.07	.00	1.03	1.12	1.500	.000	.00	ı	.0
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		624_EX-E.OUT													
1027.371	8.635	1.321	9.956	7.13	4.33	.29	10.25	.09	1.03	.97	1.500	.000	.00	. 1	.0
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29.896	.0093	•				.0116	.35	1.32	.59	1.56	. 0 22	.00	.00	PTPE	
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1057.267	8.914	1.417	10.330	7.13	4.12	.26	10.59	.00	1.03	.69	1.500	.000	.00	. 1	.e
	-1-	- -		- -	- [~	- ! -	- -	- -	-		- -	- -		-	
9.283	.0093	,	•			.0115	.11	1.42	. 46	1.50	.022	.00	.66	PIPE	
WALL ENTRAP	1CE														
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1866.550	9.000	1.443	10.443	7.13	4.09	.26	10.70	.00	1.03	. 57	1.500	.000	.88	0	-0
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↑ ↑ FILE: 624_EX-E.WSW

W S P G W - CIVILDESIGN Version 14.06

Program Package Serial Number: 1841

WATER SURFACE PROFILE LISTING

Date: 5-31-2019 Time:11:29:41

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"3111 MANCHESTER" HYDRAULICS
Prepared By: URBAN RESOURCE CORPORATION
Detention Outlet - 18" CMP

Filename: 624_EX-E.wsw

*****	******	********	******	*******	*******	******	*****	****	*****	*****	****	******	****	****	***
Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.			Flow Top Width				No W	
L/Elem	- Ch 5lope ******	******	- ********	 ********	******	SF Ave	- 刊F ************************************		Froude N	Norm Dp		- X-Fall ******	 ZR ****	Type	
	1			¦ ¦				1	i	1				ĺ	
1000.000	8.380	1.035	9,4 1 5	7, 1 4		.47	9.88	.00	1.03	1.39	1.500	.699 -	.00	1	.0
.413	.0093	: -	- 	, -, , ,	F	.0185	.01	1.03	1.00	1.50	.022	.80	.00	PIPE	
1000.413	8.384	1.081	9.465	7.14 -	5.24	.43 ·	9.89	.00	1.03	' 1,35 	1.500	.000	.00 -	1	.0
1.604	.0093				· - F	. 0166	.63	1.08	.92	1,50 !	.022 I	.00	.00	PIPE	
1002.017	8.399 	1.132	9,530	7.14	4.99	.39 -	9.92	.08	1.03	1.29 -	1.500 	.800	.00	1	.0
3.649	.0093	- -		:: : !	1	.0149	.05	1.13	, 84 I	1.50	.022	.09	. 80	PIPE	
1005.658	8.433	1.187	9.620	7.14 	4.76	. 35	9.97	.ee	1.03	1.22	1.500	. 200	.00	1	.0
7.283	.0093	' ' 		, , ! !		.0135	,10	1.19	.76	1.50	_ 022	.00	.69	PIPE	
1012.941	8.501	1.250	9.750	, 7.14 	4.54	.32	10.07	.00	' 1.03 	1.12	1,500 	.000	.69	1 -	.0
14.519	.0093	ı "	·	' ' I I	,	.0124	.18	1.25	.67	1.50	. 022	.00	.89	PIPE	
1027.459	8.636	1.323	9.959	' 7,14' 	4.33	.29	10.25	1	1.03 	.97	1.500	.000	.00	-	.0
29.886	.0093	· '		' ' I 1	·	.0117	.35	1,32		1.50	.022	.00	.00	PEPE]	
1057.345	8.914	1.420	10.334	7.14 	4.13	. 26	10.60	.00	1.03 	, 68 	1.500	.000	.00	1	.0
9.205 WALL ENT	.0093	'	•		,	.0115	.11	1.42	.45	1.50	.022	.00	, 96	PIPE	
1	<u> </u>		l					•	[
1066.550	9.000	1.445	10.445	7.14	4.09	.26	10.70	.00	1.03	.56	1.500	.909	.00	e	.0
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PAGE 1

Date: 5-31-2019 Time:11:29:41

♣ FILE: 624_EX-E.WSW

W S P G W ~ CIVILDESIGN Version 14.06 Program Package Serial Number: 1841

WATER SURFACE PROFILE LISTING

"3111 MANCHESTER" HYDRAULICS
Prepared By: URBAN RESOURCE CORPORATION
Detention Outlet - 18" CMP

Filename: 624 EX-E.wsw

	e en er en en en en en en en		Detention	Outlet - 1	18" CMP ********	*****	Filena: ******	me: 624 <u>.</u> *******	EX-6.WSW *******	****	******	******	*****	****	***
*****	Invert	Depth	Nater	Q	Vel	Vel]	Energy	Super	Critical	Flow Top	Height/	Base Wt	1	No W	th
Station	Elev	(FT)	Elev	(CFS)	(FPS)	Head		[]ev	Depth	Width	DiaFT	or I.D.	Zl	Prs/F	Pip
1.453		-		-		 SF Avel		SF Onth	Fraude N	Norm Do	- "N"	X-Fall	ZR	Type	Ch
1/Elem *******	********	· • • • • • • • • • • • • • • • • • • •	****	*****	*****	*****	*****	*****	*****	*****	******		****	*****	6 × *
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1000.000	8.380	1.035	9.415	7.15	5.50 	.47	9.88	.09	1.04	1.39	1.500	.000 	.00	1	.0
- ,464	 6993					- - 186	.01	1.04		1.50	.022	.00	.00	PIPE	
, 707	10023					1		1		l	l				
1000.404	8.384		9.465	7.15	5.24	.43	9.89	.00	1.04	1.35	1.500	.009. 	.80	1	.0
1.683	.003	i	-			 - 0166	.03	1.98		1.50	.022	 .00	.69	PIPE	
¥.662	בפטט.			1 :	1	.0100		1		1		'			
1002.007	8.399	1.132	9.531	7.15	5.00	. 39	9.92	.00	1.04	1.29	1.500	.000	.99	. 1	.0
		ļ [.0149		1.13		1.50	.022 .022	.00	.00	PIPE	
3.614	.0993	: 1		1	l	.0149	.05	1.13	1	1	1	.00	1	1	
1005.621	8.432	1.188	9.620	7.15	4.76	.35	9,97	.09	1.04	1.22	1.500	.000	.00	1	.0
-			-					1]	1	PIPE	
7.276	.0093		ı	:	I	.0135	.10	1.19	.76 I	1.50	-022 I	. 66°	.00	 PIPE	
1012.897	8.500	1.250	9.751	7.15	4.54	.32	10.07	.00	1.84	1,12	1.500	.000	.00	1	.0
	i		-						•					-	
14.428	.0093		ı		ı	.0124	.18	1.25	.67	1,50	.022 !	.00	.69	PIPE	
1027.318	I 8,634	1.324	9.958	7.15	4.33	.29	10.25	.00	1,04	,97	1.500	.089	.89	1	.0
1047.310							- · · · •								
29.698	.0093					.0117	.35	1.32	.58	1.50	.022	.00	.69	PIPE	
1057.016	8.911	1.421	10.332	7.15	4.13	.26	10.60	.00	1.84	,67	1.500	.280	.00	1	.0
10337.010									[-	
9.534	.0093					.0115	.11	1.42	.45	1.50	.022	.80	.99	PIPE	
WALL EN	TRANCE	i 1		: 1	ı	1		ı	t	ı	ı	1 1	I	ŀ	
1066,550	9.200	1.448	10.448	7.15	4,09	.26	10.71	.00	1.04	.55	1.500	. 080	.99	' 0	.0
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624_EX-F.EDT

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					WAT	ER SURF	ACE PR	ROFILE	 CHANNE 										1
CARD	SECT	CHN	NO OF	AVE PIER	HEIGHT:	1 BASE	Z.1.	. ZR	INV	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)) Y(9)	Y(10)
CODE	NO	TYPE	PIER/PI	WIDTH	DIAMETE	R WIDT	Н		DROP										
CD	1	4	1		2.000														
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CD	3	4	í		1.000													PAGE NO	1
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				WATER	SURFACE PE	ROFILE	- 7ITL	LE CARD	I, EST ING	a'									
HEADIN	G LINE	NO 1.	IS -										ø						
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HEADIN	G LINE	NO 2	15 -	D-1-		MODAN D	CEONIO A	-c /oon	ADATTOM:										
				Prep	pared By: 1	UKBAN K	EZOUKC	LE CORP	ONATION										
HEADIN	G E. EINE	NO 3	12 -	Data	ntion Out	104 . t	о" смя	,		ilana	ne: 624	FY-F	wen						
				pete	METON OUT.	TGT . I		15 P G		XXCHG	ne. va-		· ···					PAGE NO) 2
				MATER	SURFACE PI	PARTIE				N/G									
ет еме	NT NO	2 Т	. n svsm	EM OUTLET		*													
CUENC	14) 140		U/S I			INVERT	SECT						W	S ELE	V				
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ELEME	NT NO	2 1	S A REACH		*	*													
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			-,-		71.550	9.598	2			022					.000	.000	3	.000	Ð
ELEME	NT NO	3 T	S A WALI	L ENTRAN	ICE		*												
			U/S I			INVERT	SECT		F	P									
					71.550	9.590	2			022									
ELEME	NT NO	4 I	S A SYSTI	EM HEADWO	RKS		*				*								
			U/S I	DATA ST	ATION 1	INVERT	SECT						Ŋ	SELE					
				10	371.550	9.598	2							9.590					

624 EX-F.0UT W S P G W - CIVILDESIGN Version 14.06 ★ FILE: 624_EX-F,WSW

PAGE

Date: 5-31-2019 Time:11:29:54

Program Package Serial Number: 1841

WATER SURFACE PROFILE LISTING

"3111 MANCHESTER" HYDRAULICS Prepared By: URBAN RESOURCE CORPORATION

Filename: 624_EX-F.wsw Detention Outlet - 18" CMP Energy | Super | Critical | Flow Top | Height / | Base Wt | Vel Invert Depth Water Elev Depth | Width | Dia. -FT or L.D. | ZL Prs/Pip Elev (FT) Elev (CFS) (FPS) Head Grd.El. Station SE Doth Froude N Norm Do | "N" X-Fall ZR Type Ch SF Ave L/Elem |Ch Slope ***** A+***** ******** 1.500 .000 .00 .71 1.50 1 .0 .28 9.96 .00 1888,888 8.970 .714 9.684 3.50 4.22 .00 .00 PIPE .0142 .00 .315 .0087 .25 9.96 .00 .71 1.50 1.500 .000 1 4.03 1000.315 8.973 ,741 9.713 3,50 .00 PIPE .0125 .02 .022 .0087 1,421 9.98 .00 1.500 .000 1 1001.736 8.985 .769 9.754 3,50 3.84 .23 .04 . 00 .00 PIPE .0087 .0110 3.815 . 21 10.02 .00 1.500 .000 1 3.50 3.66 1005.552 9.818 ,799 9.817 .00 PIPE .0087 .0097 .12 .80 .00 11.975 .19 10.14 .99 1.500 , 600 .00 1 9.122 .830 9.952 3.50 3.49 1017.526 - | -. 00 .00 PIPE .0988 .30 .83 .022 33.951 .0087 1,500 .000 .00 1 1051.477 9,416 .842 10.258 3.50 3.43 .18 10.44 .90 .71 - | -.00 PIPE .17 .73 .84 .022 .00 20.073 .0087 .0086 .84 WALL ENTRANCE 1.500 .843 10.433 10.62 1.49 .000 0 3.42 .18 1071.550 9.598 - | -- | -W S P G W - CIVILDESIGN Version 14.86 PAGE ♠ FTLE: 624_EX-F.WSW Program Package Serial Number: 1841 WATER SURFACE PROFILE LISTING Date: 5-31-2019 Time:11:29:55

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"3111 MANCHESTER" HYDRAULICS Prepared By: URBAN RESOURCE CORPORATION

Detention Gutlet - 18" CMP Filename: 624_EX-F.wsw

****	***	******	*****	苯冠氏器测穴面积计量剂	K加密橡妆水水的水水)	*****	******	******	****	******	******	******	*******	***	****	AL AV
	ı	Invert	Depth	Water	l Q	Vel	Vel	Energy	Super	Critical	Flow Top	Height/	Base Wt	ţ	No Wt	h
Statio	m	Elev	(FT)	£lev	(CFS)	(FPS)	Head	Grd.EI.	Elev	Depth	Width	Dia,-FT	or I.D.	ZL	Prs/P:	ìр
	- į.			j									· -		·	
L/Elem	r (Ch Slope		i i			SF Ave				Norm Dp		X-Fall		Type (Ch
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1000.0	900	8.970	.715	9.685	3.51	4.23	.28	9.96	.90	.71	1.50	1.500	.000	.00	1	.0
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							624_EX-	-F.OUT						
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9.121	.831	9.952	3.51	3.49	.19	10.14	.00	.71	1.49	1.500	.000	.00	. 1	.Ö
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	8.973 .0087 8.985 - - .0087 9.018 .0087	8.973 .742 .0087	8.973 .742 9.715 - -	8.973 .742 9.715 3.51 .0087	8.973	8.973	8.973	.0087	8.973	.0087	0.087	0.0087	.0087 8.973	.0087

↑ FILE: 624_EX-F.WSW

W S P G W - CIVILDESIGN Version 14.06

Program Package Serial Number: 1841

WATER SURFACE PROFILE LISTING Date: 5-31-2019 Time:11:29:55

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"3111 MANCHESTER" HYDRAULICS
Prepared By: URBAN RESOURCE CORPORATION
Detention Outlet - 18" CMP Filename: 624_EX-F.wsw

*********	****	****	*****	******	****	*******	*****	苯苯并基苯苯苯苯	******	摩尔摩摩尔安赛兴乐	******	******	*****	****	***
Station	Invert Elev	Depth	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	: :	Critical Depth			Base Wt		No Wt	
			-	ļ i					i-			j			
L/Elem	Ch Slope					SF Ave	HF	SE Doth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type	
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1000.000	8.970	.735	9.686	3.52	4.23	. 28	9.96	-89	.72	1.50	1.500	.000	.00	1	.0
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.315	.0087					.0142	.00	. 72	1.00	.85	.022		.00	PIPE	
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1001.759	8.985	.771	9.756	3.52	3.85	. 23	9.99	.00	.72	1.50	1.500	.008	.00	1	.e
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3.798	.0087			1	'	.0110	.04	.77	.87	.85	.022	.09	.00	PIPE	
1		[[1 1				1	I	1		1	1	1	
1005.557	9.018	.801	9.819	3,52	3.67	.21	10.03	.00	.72	1.50	1.500	.000	.08	1	.0
-				{]			-	-	
11.744	.0887					.0097	.11	.80	.81	.85	.022	.00	.00	PIPE	
]		[1			1		ļ	
1017,301	9.120	.832	9.952	3.52	3.50	.19	12.14	.00	.72	1.49	1.500	. 666	.00	1	.0

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34.215	. 0087		•	,		.0088	.30	83	.75	.85	.022	.00	. 88	PIPE	
	9.416	, 845	10.262	3.52	3.43	.18	10.44	.09	.72	1.49	1.500	. 900	. 00	1	,0
1851.516	2.410	-1-	.i-	- -	- -	-1-	-1-	- -	- -		- -	- } -		-	
	.0087	'	1	r	•	.0086	.17	.85	.73	.85	.022	.00	.00	PIPE	
WALL ENTRANG	CE														
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1071.550	9.590	.846	10.436	3.52	3.42	.18	10.62	.60	.72	1.49	1.500	,000	. 90	. 0	, о
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↑ FILE: 524_EX-F.WSW

W S P G W - CIVILDESIGN Version 14.06

Program Package Serial Number: 1841 WATER SURFACE PROFILE LISTING

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"3111 MANCHESTER" HYDRAULICS Prepared By: URBAN RESOURCE CORPORATION
Detention Outlet - 18" CMP

Prepared By: URBAN RESOURCE CORPORATION Detention Outlet - 18" CMP Filename: 624_EX-F.wsw															
			Detention	Outlet - 1	T8. CWb		Filena	ne: 624_	EX-F.WSW *******	******	*****	*****	****	****	***
*******	**************************************	*****	*******	**************************************	*****				Critical	Elaw Taa	l Liad mintri	Page Mf		INO W	+ h
	Invert	Depth	Water	Q	Vel	Vel Head	Energy Grd.El.		Depth			or I.D.		Prs/	
Station	Elev	[(FT)	Elev	(CFS)	(FPS)			l crev	l	, MIUCI)	DX411				, + P
. /#1	Ch Slope	i		T T	1	SF Ave		ls# Doth	Froude N	Norm Do	"N"	X-Fall	ZR	Туре	C h
*******	********	 *******	******	*****	*****	***	*****	******		*****	*****	!	****	****	***
		i i			•			ĺ	į	į	i	i	ĺ	i	
1000,000	8.976	,717	9.687	3.53	4.23	.28	9.97	. 69	.72	1.50	1.500	.000	.00	1	. (9
		i1			1								-	-	
.327	.0087	•				.0142	.00	.72	1.00	.85	.022	.00	.00	PIPE	
	•	I						1			1		ļ	l	
1000.327	8.973		9.717	3.53	4.94	. 25	9.97	.00	.72	1.50	1.500	.000	.00	. 1	.0
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1.436	.0087				ı	.0125	.02	74	.93	.85	.022	.00	00	PIPE	
]	l ŀ						i]	1 50	1 500	.000		1	.0
1001.763	8,985	. 773	9.758	3.53	3.85	. 23	9.99	.00	.72	1.58	1.500	_	.00	1_1	.0
3 500					-	.0110	 .04	.77	.87	.85	.022	.00	.00	- - P3.PE	
3.829	.0 0 87				:	.0110	.04		,	ره .	1 022	1 .00	1 .00	1	
1005.592	9.018	.892	9.821	3,53	3.67	. 21	10.03	. 99	.72	1.50	1.500	. 000	.00	1.	.0
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11,812	.0087			'	'	.0097	.11	.80	.81	.85	.622	.00	.00	PIPE	
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1017,405	9.121	.834	9.955	3.53	3.50	.19	10.14	.00	.72	1.49	1.500	.000	.00	1	.0
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34.063	. 2087					.0088	.30	-83	. 75	.85	.022	.00	.00	PIPE	
		[l				l]	i	1		١ _	
1051.468	9.416	.847	10.263	3,53	3.43	.18	10.45	. 90	.72	1,49	1.500	.000	.00	, 1	.0
-		- -							j					1 -	
20.082	.0087					.0086	.1.7	.85	.73	.85	.022	.09	.00	PIPE	
WALL EN	TRANKE							:	ŧ	ı	ı	1	t	ı	
1,071.558	9.590	.848	10,438	3,53	3,43	. 18	1.0.62	.00	.72	1.49	1.500	.009	.00		.0
1,071,230		[]										l	1-	١	
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↑ FILE: 624_EX-F.WSW

W S P G W - CIVILDESIGN Version 14,06

Program Package Serial Number: 1841

WATER SURFACE PROFILE LISTING

Date: S-31-2019 Time:11:29:55

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"3111 MANCHESTER" HYDRAULICS

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624_EX-F.OUT

Prepared By: URBAN RESOURCE CORPORATION

Detention Outlet - 18" CMP Filename: 624_EX-F.wsw

Detention Outlet - 18" CMP Filename: 624_EX-F.wsw

*******	*****	*****	*******	******	****	*****	****	****	******	*****	*****	****	*****	****	*
Station	Invest Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.		Crîtical Depth	Flow Top Width	Height/ DiaFT		 ZL 	No Wth Prs/Pi 	
L/Elem *******	- Ch Slope *******	******	*******	诸原兴为华兵亦成 。	******	SF Ave		5E Dpth ******	Froude N	Norm Dp *******	"N" ******	X-Fall	ZR ****	Туре С *****	
1000.000	 8.970 	,718	9.688	3.54	4.24	. 28	9.97 	.00 	.72 -	l 1.50 	 1.506 -	.000	,00 -	1 . -	Ð
. 325	.0087	 	- " 	:	"	.0142	.00	,72	1.00	.85	. 022 	.00	. 69.	PIPE	
1000.325	8.973	.745 	9.718	3.54	4.84	, 25 -	9.97 -	.09 	.72 	1.50 }-	1.50 0 	.000	.00	i -	.0
1.418	. 2087 	·		' 	,	.0125	.02	.75	.93	.85	.022 	.00		PTPE 	_
1001.742	8.985 -	.774 -	9.759	3,54	3.85		r	.00 			1.500 	.000 - 	.00	1-	.0
3.832	.0087					.0110	.04	.77 	.87 !	.85	.022 1.500	.00 	.00	PIPC 1 .	æ
1005.574	9.018	.804 -	9,822 	3.54 	3.67 	.21 .0097	10.03 .11	.00 .80	.72 .81	1.50 .85	.822	- - -	-	I- PIPE	Ū
11.735	.0087 9.120	,835	9,955	 3,54	3,50	,19 ,19	10.15	.00	.72	1,49	1.500	1 .000	.00	1	. 0
33,649											 -022	 .09	.00	- PIPE	
1050.958	9,412	.848	10.260	3.54	3.43	.18	10.44	.00	 .72	1,49	1.500	.099	.00	 . ³ ·	Ø
20.592	- .0087					 -0086	.18	.85	.73	.85	.022	.00	.00	PIPE	
WALL EN	1		I	1		40	10.62	1 .00	.72	1.49	1.500	999.	.00	1 8 .	e
1071.550	9.590	.849 	10.439	3.54 -	3.43 	.18								I	v
↑ FILE: 62	6_EX-F.WSW		Program	w s Package Se			SIGN Versi 41	on 14.06						PAGE	1
			L1 MANCHES	TER" HYDRAL	WATER : JLICS	SURFACE	PROFILE 1	ISTING	0	i	Date: 5-1	31-2019	Time:1	1:29:55	į.
		Pr		: URBAN RES Outlet - 1		RPORATIO		me: 624_	EX-F.wsw		*****	nde sake nace nake nde sake nake nake	****	***	k *h
*****	****	**********	***********	0	Vel	Vel	Energy	l Cunar	iceitical	Flow Top	Height/	l Base Wit	t t	INO Wth	1
Station	Invert Elev	Depth (FT)	Water Elev	(CFS)	(FPS)	Head	Grd.El.	Elev 	Depth			or I.D.	ZL 	Prs/Pi	
L/Elem	Ch Slope *******	 *******	*****	*******	*****	SF Ave:	•	SE Dpth ******	Froude N	Norm Dp *******	*N"	X-Fall	ZR *****	Type C	
1000.000	8.970	.719	9.689	3.55	4.24	.28	9.97	.00	.72	1.50	1.500	.600	.00	1 .	.a
.327	.0987	i	-	- 	 	.0142	.90	 .72 	1.00	.85	.022	.99	.00 .00	PIPE	
1000.327	8.973	.746	9, 71 9	 3.55 	4.04 	. 25	9.97	.00	.72	1.50	1.500 	.909	.00	'1 . -	. 0
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								624_EX	-F.OUT						
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1001.760	8.985	.775	9.760 - -	3.55 - -	3.86	.23	9.33	. 66. - -						1.	.0
3,815	- - .0087	- -	- 1-	- -	-1-	.0110	.04	.77	.87	.85	,022	.00	.00	PIPE	
] 1005.575	9.018	.805	9. 82 3	3.55	3.68	. 2.1	10.03	.09	,72	1.50	1.500	. 666	.99	1	.0
- - 11.778	- - .0087	- ŧ -	- j -	-	- -	- - .0097	- - .11	.80	.81	.85	.022	.26	00	PIPE	
1017.353	9.120	.836	9.957	3.5 5	3,50	.19	10.15	.00	.72	1.49	1.500	.000	.90	1	.0
- - 33.696	- - .0087	- ! -	- -	- -	- -	- - .0088	- j - . 30	- - .84	 -75	.85	- .022	 -00	. 88	PIPE	
1051.048	9,412	.850	J 10.262] 3.55	3.44	.18	10.45	.00	,72	1,49	1.500	.000	. 98	1	.0
20.502		- -	- -	-1-	- -	- - .0086	- -	- - .85			- . 0 22	-	- .98	- PIPE	
WALL ENTR						.0000		•							
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1071.550	9.590 - -	.851 - -	10.441 - -	3.55 - -	3.43 - -	.18 - -	10.62 - -	.09 - -	.72 -1	1.49 	1.500 -	-	- '88	-	.0

↑ ↑ FILE: 624_EX-F.WSW

W S P G W - CIVILDESIGN Version 14.06

Program Package Serial Number: 1841

WATER SURFACE PROFILE LISTING

Date: 5-31-2019 Time:11:29:55

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"3111 MANCHESTER" HYDRAULICS
Prepared By: URBAN RESOURCE CORPORATION
Detention Outlet - 18" CMP

Filename: 624_EX-F.wsw

		******	*******		KRRKKKK KOLE	*****	*********	******	******	*******	***+*	*****	****	****	***
Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FP5)	Vel Head	Energy Grd.El.		Critical Depth			Base Wt or I.D.		No W	
L/Elem	Ch Slope					SF Ave	HF		- Froude N		"N"	 X-Fall *******		Type	
1000.000	8,970	,720	9.690	3.56	4,25	. 28	9.97	.00	,72	1,50	1.500	.000	.00	1	.0
. 335	.0087	- -	!] <u>{</u>	- 	 -0142		 72 I	1.00	.85	 .022	 .00	- , 0 0	PIPE	
1000.335	8.973 	.747 	9.720		4.05 - + -				1	:		•	.00	' 1 -	.0
1.417 1001,752	.0087 8,985	.776	9.761	3.56	3.86	.0125 .23	.02 9.99	.75 .00	.93 -72	.85 1.50	.022 1,500	.00 	.00	PIPE 1	.0
3.781	0087								.87	85		.00	.00	PIPE	
1005.533	9,018	.806 	9.824		3,68 -	.21 	10.03	 .00 	.72	1.50	1.500	.090 	.00	1 -	.0
11.739	.0087	· 		· [.0097	.11	.81 	.81	.85	.022	.98	.00	PIPE	
1017.272 - 33.755	9,128	.838 	9.957	3.56 	3.51 -	.19 - -0889	10.15	.00 .84	.72 .75	1.49 .85	1.500 -022	.060 00.	.09 - -	1 - PIPE	.0
1051.027	9.412	 .851	10.264	3.56	3.44	.18	10.45	.89	.72	1.49	1.500	. 906	.09	1	.0

												R-A2.EDT				
FILE: 6	24_PR	A2.W	SN				WISP	6 W -	EDIT L	ESTING - V	ersion 14	.06	Date	: 6- 6-2019	Time:10: PAGE	22:21
CARD	~ F C T	CIM	316	3.06	AVE PIEF				FILE ~	CHANNEL D	1) Y(2)	Y(3) Y(4)	Y(5) Y(6) Y(7) Y(
CARD CODE	SECT NO	CHN TYPE			WIDTH	DIAMET				DROP	-,	. , . , .				
CD	1	3		0	.000	1.500	8.000	.000	.000	9 .00						
CD	2	4		1	500	3.590	5 000	, , , 626	908	9 ,69						
CD	3	3		0	.000	4.008	6.000		\$ P G 1						PAGE NO	1
					WATER	SURFACE	PROFILE	- TITLE	CARD 1	LISTING						
HEADING	LINE	NO 1	IS	-	*31:	13 MANCHE	ESTER" F	YDRAULIC	:5			9				
HEADING	LENG	NO 2	IS	-	Pre:	pared By:	URBAN	RESOURCE	CORPO	RATION						
HEADING	LINE	NO 3	15	-								04 BB A				
					SD I	LINE 'A'		E.c	5 P G I		Tename: 6	24_PR-A.wsw	•		PAGE NC	2
					MATER	SURFACE	PROFILE			D LISTING						
ELEMEN	IT NO	1 1	SA	SYST	EM OUTLE		•									
				U/S	DATA 5°	MOITAT	INVERT	SECT				lis.	8.090 8.090			
ELEMEN	IT NO	2 1	5 A	REAC		*		* *					D. D. T. L.	ANGLE	ANG PT	MAN H
				U/\$		TATION 164.490	INVERT 8.420			N .013			RADIUS .000	.980	.000	9
€LEMEN	OM T	3 1	SA	REAC		*	T = 0 /F D 2	* *		N			RADIUS	ANGLE	ANG PT	MAN H
				U/S		TATION 195,900	8,586	T SECT		.013	:			-15.680	.000	0
ELEMEN	OM TE	4 1	5 A	JUNC		¥	0,,00	* *	*	• • • •	*		*		*	
***************************************				U/S	DATA S	TATION 201.200	INVER		AT-1 L Ø	AT-2 N 0 .013	Q3 .66	Q4 90 .000		NVERT-4 PI .000 ANGLE	11 3 PHI 4 .000	.000
													.996			
ELEMEN	ON TH	5 1	:S A	REAC	H	4		* *								
				U/S		TATION		r sect		N	1		RADIUS	-60.600	ANG PT .000	MAN H 0
				554		248.800	8.846	3 2		.013	•		43.003	-00.000	.000	٠
CLEMEN	IT NO	5 ;	.S A	REAC		TATION	INVER			N			RADIUS	ANGLE	ANG PT	MAN H
				0/3		285.230	9.03	9 2		.013	:		.000	.000	.089	0
ELEMEN	IT NO	7 3	[S A	REAC		*		* *		N			RADIUS	ANGLE	ANG PT	н иам
				U/5		TATION 340.330	INVERT 9.301			.013	;		44,997	70.160	.000	9
ELEMEN	AT NO	8 3	is A	REAC		*	2120	* *		,						
				U/S	DATA S	TATION		T SECT		N			RADIUS		ANG PT	Man H e
						435.790	9.78	8 2 * *		.013	\$		505.963	10.810	.000	Ð
ELEMEN	YT NO	9 3	IS A	REAC		TATION	TNVER	T SECT		N			RADIUS	ANGLE	ANG PT	MAN H
				<i>5, 3</i>		584.810	10.52			.01	}		494.110	-17.280	.000	8
ELEMEN	ON TE	10	ES A		L ENTRA			*								
				U/5		TATION	INVER			гР . 013	ì.					
C: C)****	er ken	31 1	re 1	ever	1 EM HEADN	584.810 0865	10.52	9 2		. 101	,					
ELEMER	NI NU	ŦŤ	וא כו			TATION	INVER	T SECT				ì	S ELEV			
				د رب		584.810	10.52						10,520			

624_PR-A2.OUT W S P G W - CIVILOESIGN Version 14.06

FILE: 624_PR-A2.WSW Program Package Serial Number: 1841

WATER SURFACE PROFILE LISTING

Date: 6- 6-2019 Time:10:22:23 0 "3111 MANCHESTER" HYDRAULTCS

PAGE 1

Prepared By: URBAN RESOURCE CORPORATION Filename: 624 PR-A.WSW

			SD LINE A	\ [*]	. 4. 4. 4. 4. 4. 4. 4.	******	File	1ame: 624	4_PR-A.W51	/ ********	*****	*******	****	*****	ŧ
********** Station	********** Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.		Critical Depth	Flow Top Width	Height/ DiaFT	Base Wt or I.D.	ZL	No With Prs/Pi	
- L/Elem ********	- Ch Slope	 ********	***************************************	******	*******	SF Ave	- HF ********	SE Doth	- Froude N ******	Norm Dp	******	X-Fall	ZR *****	Type C	h ∗
1000.000	8.098	1.294	9.384	66.77	6.45	.65	10.03	.00	1.29	8.96	1.500	8.666	.88	0 . 1-	8
4.126	.9929	[!	- -	 	1	.0028	01 01	1,29	1.00	1.50	.013	.09	.00	вох	
1884.126	8.098	1.357 	9.455	66.77	6.15	.59	13.04	.ø9 	1,29 	8.00	1.500	8.000	.048 -	-	8
19.640	.0020				•	.0025	.05 near top (1.36 of box co	.93 onduít	1.50	.013	.00	.00	BOX	
1023.765	8.138		9.56 1	66.77	5,87	.53	10.09	.90	1.29	8.00 }	1.50 0 	8.098 	.00 	! e . -	Ð
35.610						.0023	.08 near top (1.42	.87	1.50	.013	.00	.00	BOX	
1059.375	8.209	1.458	9.657	66.77	5.72	.51) 10.18	. 00	1.29	8.00	1.500	8.000	.00] 0 .	8
- HYDRAULIC					,		near top	•	'	-			-	-	
1059.375	8.209	1,134	9,344	66,77	7.36	.84	1	.00	1.29	8.00	1.500	8.000	.00		Ð
		}	-	[] 		. 0050	r	1,13	1.22	1.50	.013	.69	00	ј. ВОХ	
1063.188		1.117 	9.334	66.77 	7.47	.87		 ,69 	1.29	8.00	1.508 	8.000 -	.00 -	'e. -	8
9.871 4 FILE: 62	.0020			W.S	' PG₩-	.0055 CIVILDE	.05 SIGN Versî	1.12	1.25	1.50	.013	.00		BOX PAGE	2
	~			Package Se	WATER	ber: 18 SURFACE	41 PROFILE L	ISTING		;	Date: 6-	6-2019	Time:1	0:22:23	•
				TER" HYDRAL : URBAN RES 4'		RPORATI		name: 62	0 4_PR-A.ws	w					
*******	********* Invert	********** Depth	********** Water	********** Q	******** Vel	****** Vel	********* ! Energy	******* Super	******** Critical	******** Flow Top	******** Height/	******** Base Wt	***** }	No Wth	.*)
Station	Elev	(FT)	Elev	(CFS)	(FPS)	Head	Grd.£l.	Elev	Depth	Width -	DiaFT	or I.D.		Prs/Pi	.p
L/Elem *******	Ch Slope	*****	*****	******	******	SF Ave	HF *******	SE Dpth ******	Froude N	Norm Dp *******	"N" ******	X-Fall *****	ZR ****	Type C	.h •≠
1073.060	8.237		9.302	66.77	7.83	.95		.09	1.29	8.00 1	 1.500 -	8.000	.00	 e .	.0
10.457	.0020	<u> </u>	-	[!	 !	.0064	1	 1.07	1,34	 1.50	.013	.00	.00	BOX	
	1				i		1	F	1	1	1	t	:		

									624 PR	-A2,OUT						
	1083.517	8,258	1.016	9.273	66.77	8.22	1.05	10.32	.00	1.29	8.00	1.500	8.008	.00	. 0	.0
	-1-	-1-	- j ~	-1-	- -	- -		-1-							-	
	10.709	.0020					.0074	.08	1.02	1.44	1.50	.013	.00	.00	80X	
	I	l	1	1	ı				- 1	4 20	9.00	1 500	8.000	.02	9	ø.
	1094,226	8.279	.969	9,248	66.77	B.62	1.15	10.40	.040	1.29	8,00	1.500		.00	-	.0
	- -	[-	- -	- -	- -		- -	- -			1.50	.013	.00	.09	BOX	
	10.742	.0020					.0 0 85	.09	.97	1.54	1.50	1 672	1 de l	.00	[
	i	. 1	l		22		4 07	10.45	.00	1.29	8.00	1.500	8.606	.00	, 19	.0
	1104.968	8.301	.924	9.224	66.77	9.04	1.27	18.49							1.	
	- -	-1-	- -	- -	- -	- -	.0099	- - .11	.92	1.56	1.50	.013	.00	.00	•	
	10.628	.0020	t t				כנטט.	. 41		1.50	1.50	1 1	1 1		I	
		8.322	.881	9.202	66.77	9,48	1.40	10.60	.00	1,29	8.00	1,500	8.000	.00	· ø	.0
	1115.596	8.344	- -		- -	-1-	- -	-1-				.	-		1-	
	10.415	.0020	- ; -	-1		'	.0115	.12	.88	1.78	1.50	.013	.00	.00	BOX	
	10.41.	.0020	ı		1			1	1						1	
	1126.011	8.343	.840	9.182	66.77	9.94	1.53	10.72	.00	1.29	8.00	1.500	8.000	.00	8	.0
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	10.134	.0020	,	•	•	·	0133	.13	.84	1.91	1,50	.013	.00	.00	ROX	
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	1136.145	8.363	.801	9.164	66.77	10.43	1.69	10.85	.08	1.29	8.00	1.500	8.000	.00	. 0	.0
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	9.808	.0020					.0154	.1.5	80	2.05	1.50	.013	. 99	.00	BOX	
	į)	ļ	ļ	1		ļ								ı	
	1145.953	8.383	. 763	9.146		10.94	1.86	11.00	.90	1.29	8.00	1,500	8.608	. 90	. 6	.0
	- -	- -	- -	-] -			- -	- -						.00	BOX	
	9,454	.0020					.0179	.17	.76	2.21	1.50	.013	.00	. 66	1	
				ţ	l						8,00	1.500	8,699	.00	1 8	.0
	1155.407	8.402	.728	9.130		11.47	2.04	11.17	.00	1.29		1.500			1-	.0
	-1-	- -	- -	- 1 -	- -	- -		.19	 .73	2.37	1,50	.013	.90	. 66	BOX	
	9.083	.0020			w.c.b	e 11 e	.0208	.19 GN Versio		4.3/	1,20	-013	.00		PAGE	3
ተ	FILE: 624_P	R-AZ.WSW		Program Pac				BM AGUZTO	11 14.00							-

Program Package Serial Number: 1841 WATER SURFACE PROFILE LISTING Date: G- G-2019 Time:10:22:23

"3111 MANCHESTER" HYDRAULICS Prepared By: URBAN RESOURCE CORPORATION SD LINE 'A'

	Prepared by: URBAN RESOURCE CORPORMITON Filenare: 624_PR-A.WSW														
.*************************************	i********** Invert	-********* Depth	Water	Q Q	******** Vel	Vel [Energy	Super	Critical	Flow Top				No W	
Station	Elev	(FT)	Elev	(CF5)	[(FPS) [[Head	Grd.£1.	Elev	Depth	Width -	DiaFT	or I.D.	ZL -	Prs/	₽ip
	Ch Slope				,	SF Ave				Norm Dp *******		X-Fall		Type	
*******	*******	******	*****	*******	******** 		*****								_
1164.490	8.420	.694	9.114	66.77	12.03	2.25	11.36	.38 	1.29	8.09	1.500 	8.999 	.00	- 8 }-	.0
3.704	.0051	; ;			·	. 6229	.08	.99	•	1.12	.013	.00	. 80	BOX	
1168.194	8,439	.682	9,121	66.77	12.24	2.33	13.45	.31	1.29	8.89	1.500	8.000	.00	่อ	.0
9.864	- 0051		- -		-	.0254	.25	.99	1	1.12	.013	.99	.00	BOX	
1178.058	8.489	.650	9.139	66.77	12.83	2.56	11.70	.34	1.29	8.00	1.500	8.000	.00	9	. 0
-	-								-			ļ i		-	
9.215	, 1961 			1	l	.0296 	, 27	.99 !	2.80 	1.12 	.013 	ତେ. 	.89	BOX	

								624 PR	-A2.OUT						
1187.273	8.536	.620	9.156	66.77 13	.46	2.81	11.97	. 38		8.00	1.500	8.000	.80	. 0	.0
-1-	- 1-	- -	- -	-	- -	- -					•	- <u>-</u>		-	
8.627	.0051					.0344	.30	1.99	3.01	1.12	.013	.60	.00	BOX	
	1						42.27	20	2 20	a 00	1.500	8.000	.80	0	.0
1195.900	8.580	.591	9.171		1.12	3.09	12.27	.00	1,29	8.00				1.	.0
-[-	- í -	- -		- -	- -	- -	,			-	.013	 89.	- ,88	BOX	
DUNCT STR	.0057			- WARNING -		.0213	.11	1.50	3.24	Tuna			,00	DOX	
				WARNING -	Junct	ion Ana	31.V\$35 - C	nange in I	- chamier	Type	1			ŧ	
	0.640	2 562	14 174	66,77 8	8.85	1.22	12.39	.08	2.56	3.10	3.500	.000	.00	' 1	.a
1201.200	8.610	2.561	11.171	- -	- -	- -					_			ļ	
-j-	- - .0048	-1-	- 1 -	-1-		.0053	.11	2.64	1.00	2,74	.013	.ee'	.99	PIPE	
21.512	. 6649	1	ŧ	1				1			1	1		1	
1222.712	8.714	2.682	11.396	66.77 8	3.44	1.11	12,50	.97	2.56	2.96	3,500	.000	.00	1	. 0
-1-	- -	-1-	-1-	-1-	-!-	- 1-		· -	}		-		-	-	
26.088	.0048	•	'	,		.0050	.13	2.75	.91	2.74	.013	.00	.98	PIPE	
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1248.800	8.840	2.705	11.545	56.77 8	3.37	1.09	12.63	.00	2.56	2,93	3.500	.090	.00	1	.₽
- -	- -	- -		- -	- -	- -	1			•				į-	
36.430	.0052					.0058	.18	2.71	. 89	2.64	.613	.00	.00	PIPE	_
♠ FILE: 624_6	PR-A2.NSW			WSPG			IGN Versio	m 14.06						PAGE	а
			Program Par	ckage Serial	Numbe	r: 1843	L								

Program Package Serial Number: 1041 WATER SURFACE PROFILE LISTING

Date: 6- 6-2019 Time:10:22:23

"3111 MANCHESTER" HYDRAULICS
Prepared By: URBAN RESOURCE CORPORATION
SD LINE 'A'

Filename: 624_PR-A.wsw

Invert Depth Water Q Vel Vel Energy Super Critical Flow Top Height/ Base with Prs/Pip			******	***********	· ···································	******	*****	*****	******	*****	******	*****	****	F****	*****	10 10 10 10 10 10 10 10 10 10 10 10 10 1
SF Ave	****	Invert	Depth	Water	Q	Vel	Vel			!					•	
1285.230 9.830 2.667 11.697 66.77 8.49 1.12 12.82 .07 2.56 2.98 3.500 .000 .00 1 .00	Station	Elev	(FT)	Elev	(CFS)		:		Elev	Depth	Width	DiaFT	or I.D.	, Z.L	Prs/I	Pi.p
1285.236 9.630 2.667 11.697 66.77 8.49 1.12 12.82 .07 2.56 2.98 3.500 .000 .00 1 .0 .55.100 .0049 .0050 .28 2.74 .92 2.72 .013 .00 .00 .00 .00 .00 .00 .00 .00 .00 .0	1/21em	Ch Slone]]	- - 			SE Opth	Froude N	Norm Dp	.M.,	X-Fall	ZR	Туре	Ch
55.100 .0049 1340.330 9.300 2.707 12.007 66.77 8.36 1.09 13.09 .01 2.56 2.93 3.500 .000 .00 PIPE 1340.330 9.300 2.707 12.007 66.77 8.36 1.09 13.09 .01 2.56 2.96 3.500 .000 .00 1 .0 .0050 1415.371 9.677 2.586 12.363 66.77 8.43 1.10 13.47 .01 2.56 2.96 3.500 .000 .00 1 .0 .0050 1415.371 9.677 2.686 12.363 66.77 8.43 1.10 13.47 .01 2.56 2.96 3.500 .000 .00 1 .0 .0050 1435.790 9.780 2.686 12.466 66.77 8.43 1.10 13.57 .01 2.56 2.96 3.500 .000 .00 1 .0 .0050 137.837 .0050 .00	*****		******	*****	******	*****	*****	*****	*****	*****	****	****	****	从米海沟岸	****	***
55.100 .0049 1340.330 9.300 2.707 12.007 66.77 8.36 1.09 13.09 .01 2.56 2.93 3.500 .000 .00 PIPE 1340.330 9.300 2.707 12.007 66.77 8.36 1.09 13.09 .01 2.56 2.96 3.500 .000 .00 PIPE 1415.371 9.677 2.586 12.363 66.77 8.43 1.10 13.47 .01 2.56 2.96 3.500 .000 .00 PIPE 1415.372 9.780 2.686 12.466 66.77 8.43 1.10 13.57 .01 2.56 2.96 3.500 .000 .00 PIPE 1435.790 9.780 2.686 12.466 66.77 8.43 1.10 13.57 .01 2.56 2.96 3.500 .000 .00 PIPE 137.837 .0050 .00			i i			· ·	į		Ì	İ	l			1	1	
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75.041 .0050	1340.330										r	_			1.	. 6
1415.371 9.677 2.686 12.363 66.77 8.43 1.10 13.47 .01 2.56 2.96 3.500 .000 .00 1 .0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0				-							t	!	: '		PTPE	
28.419 .0050	75.041	. 9 6 59			4 1	ł	.0030	. 37	1	1	1	1	1	1	1	
26.419 .0050	1415.371	9.677	2.686	12,363	66,77	B.43	1.18	13,47	.01	2.56	2.96	3.500	.000	, ଚଡ	' 1	.0
28.419 .0050 .10 2.69 .91 2.69 .013 .00 PIPE 1435.790 9.780 2.686 12.466 66.77 8.43 1.10 13.57 .01 2.56 2.96 3.500 .000 .00 1 .0 137.837 .0050	11111111						1						ji	1-	-	
1435.798 9.780 2.686 12.466 66.77 8.43 1.10 13.57 .01 2.56 2.96 3.500 .000 .00 1 .0 1.0 1.0 1.0 1.0 1.0 1.0	26.419						.0050	.10	2.69	.91	2.69	.013	.00	.00	PIPE	
137.837 .0050 .0050 .59 2.69 .91 2.70 .013 .00 .00 PIPE 1578.627 10.464 2.701 13.166 66.77 8.38 1.09 14.26 .01 2.56 2.94 3.500 .000 .00 PIPE 11.183 .0050 .0049 .06 2.71 .90 2.70 .013 .00 .00 PIPE WALL ENTRANCE 1584.810 10.520 2.702 13.222 66.77 8.38 1.09 14.31 .01 2.56 2.94 3.500 .000 .00 0 0 0 0 0 0 0 0 0 0 0 0 0			1				1		}	1	•				1	
137.837 .0050	1435.790	9,780	2.686	12.466	66.77	8.43	1.10	13.57						.00	. 1	.9
1573.627 18.464 2.701 13.166 66.77 8.38 1.09 14.26 .01 2.56 2.94 3.500 .000 .00 1 .0	-		!						•				•	l -	-	
11.183 .0050 .0049 .06 2.71 .90 2.70 .013 .00 .00 PIPE WALL ENTRANCE 1584.810 10.520 2.702 13.222 66.77 8.38 1.09 14.31 .01 2.56 2.94 3.500 .000 .00 0 0 0 0	137.837	.0050					.0050	. 59	2.69	.91	2.76	.013	. 00	00	PIPE	
11.183 .0050 .0049 .06 2.71 .90 2.70 .013 .00 .00 PIPE WALL ENTRANCE 1584.810 10.520 2.702 13.222 66.77 8.38 1.09 14.31 .01 2.56 2.94 3.500 .000 .00 0 0 0 0	ļ		!		l				١	1		2 500	1 000	1 00	١,	
11.183 .0050 .0049 .06 2.71 .90 2.70 .013 .00 .00 PIPE WALL ENTRANCE 1584.810 10.520 2.702 13.222 66.77 8.38 1.09 14.31 .01 2.56 2.94 3.500 .000 .00 0 0 0 0	1573.627	10.464														.19
WALL ENTRANCE	-	-		-		1			•		r		1		or oc	
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	1284.810														1-	

* FILE: 624_PR-A2.WSW

W S P G W - CIVILDESIGN Version 14.06

Program Package Serial Number: 1841

WATER SURFACE PROFILE LISTING

Date: 6- 6-2019 Time: 18:22:23

Date: 6- 6-2019 Time:10:22:23

PAGE 1

"3111 MANCHESTER" HYDRAULICS Prepared By: URBAN RESOURCE CORPORATION

Filename: 624_PR-A.wsw SD LINE 'A' Vel | Energy | Super | Critical Flow Top | Height | Base Wt | No Wth Head | Grd.El. | Elev | Depth | Width | Dia.-FT | or I.D. | ZL | Prs/Pip Q | Vel Invert | Depth | Water |

Station	Elev	(FT)	Elev	(CFS)	(FPS)	Head	i	Elev	Depth	Width	DiaFT	jor I.D.	, ZL	Prs/I	/1p
t/Elem	- Ch Slope		 *********	- "]	İ	SF Ave	HF	SE Dpth	- Froude N ******	Nora Dp	"N" ******	X-Fall	1	Type	Ch ***
*****	********* 	*****	******			F		1	i I	! !		Ę		ĺ	
1000.000	8.890	1.095	9.185	52.00	5.94	.55		.00	1.09 	8,00	1.500	8.000	.88	0 	.0
- 3.415	.0020]			-	.0029	.91	1.09	1.00	1.29	.013	.00	.00	BOX	
	8.097	1.148	9.245	52.00	5.66	.50	9.74	.00	1.09	8.00	1,500	8,000	.00	9	.0
1003.415													-	-	
16.405	,0828			· : '	I	.0025	.04	1.15	.93	3.29 1	. 013	.00	.00	BOX 	
1019.820	8.130	1.204	9,334	52.00	5.40		_	.00	1.09	8.60	1.500	8.000	. 99	. 0	, Ø
58.736	.9026		j 1			.0021	.13	1.20	,87	1.29	.013	.90	.00	BOX	
301,30	1	l		1			1	1	l				50	1	•
1078.555	8.248	1.263		5 2.0 0	5.15	.41 -		.00	1.09	8.00	1.500 -	8.699	- 19 8 - I	-	.0
7,015	.0020	i- -]			.0021	.02	1.26	.81	1.29	.013	.60	.00	вох	
, (444		1		1	1		1	1	1	1	1			i a	
1085.571	8.262			52.00	5.15		_	.90	1.09 	8,99	1.500	8.000	.00	-	.0
HYDRAULTC				-	-	-	-	1-	,	F	,	ı	•	•	
111010101.11		1			ŧ			1	1	1	1	1	١	1	
1,085.571	8,262	.941	9.202	52.00	6.91			.00	1.09	8.00	1.500	8.000	.00	9	.0
2.723	.0020	-				 .0054	.01	.94	1.26	1.29	.013	.00	- 100	BOX	
2.123	.0020	1	f	1	!		l		1		1		l	1	_
1088.293	8,267	.927	9.194	52.00	7.01			, 90	1.09	8.00	1.500	8,000	.00	1 63	.₽
0.450	.0020				-	- 0059		.93	,	1,29	.013	.08	.00	BOX	
8.460	.0620	I.	I	I	!	.0037	1	1	1						
1096.754	8.284	. 884		52.00	7.36			.00	1.09	8.00	1.500	8.000	.00	. 0	.0
						 -0869		.88	1.38	1,29	.013	.00	.00	BOX	
8.803	.0020	ı	E	Į.	1	20002	.20	1	1.50	1.23	1	1	1		
1105.557	8.302	. 842	9.144	52.00	7.72	.92	10.07	.00	1.09	8.00	1.500	8.000	.00	Ø	.0
						•	1						.00	J- BOX	
8.915	.0020			14.5	n c W	.0080	.07 SIGN Versi	.84		1.29	.013	.00	.00	PAGE	2
♣ FILE: 62	4PR-A2.WS	W	Donosass	Packago S				.011 14.00							

Program Package Serial Number: 1841

WATER SURFACE PROFILE LISTING

"3111 MANCHESTER" HYDRAULICS Prepared By: URBAN RESOURCE CORPORATION

Filename: 624_PR-A.wsw SD LINE 'A'

624_PR-A2.0UT

									1-A2.001			L 11-1		ha	-1-
	Invert	Depth	Water	Q	Vel	Vel	Energy			Flow Too			 -	No Wi	
Station	Elev	(PT)	Elev	(CFS)	(FPS)	Head	Grd.El.	Flev	Depth	Width	DiaF1	or I.D.	ZL	151.71	-īb
-	-		-						N	-	- "N"	X-Fall	zr	Type	Ch
t/Elem	Ch Slope			****		SF Ave		SE Uptn	Froude N	Norm up	14 *******	******	##### *****	1.200	rat At
******	*****	*****	*****	******	******	*****	*****	******	1	1			ĺ	1	
		1l				4 62	10.44	.00	1.09	8.00	1.500	8.000	.00	່ ອ	.0
1114,471	8.320	.893	9,123	52.00	8.69	1.02	10.14	. 60						1_	
-		[-		.0093	.08	.80	1.59	1,29	.013	.98	96,	BOX	
8.874	.0029				ı	. 6699	.00		1.35	1,2,2	1 .015		ı ,	1	
	١	1 755	0 403	52.00	8.49	1.12	10.22	.99	1.09	8.00	1.500	8.000	.00	ė	.0
1123.345	8.337	,766	9.103											-	
	.0020		-	1-	[1	.0107	.09	.77	1.71	1.29	.013	.00	.00	вох	
8.731	,0020			1	ŧ	.010,	,,,,	1	1	i	1	1	l		
1132,876	8,355	.736	9.085	52.90	8.90	1.23	10.32	.00	1.09	8.00	1.500	8.000	.08	9	æ.
1137,879		11										11	-	ł -	
8.519	.6828	1-		1		.0125	.11	.73	1.84	1.29	.013	.00	.00	BOX	
0.315	1	1 1	İ	I	į			l	1]		1	
1140.595	8.372	.596	9.068	52.00	9.34	1.35	10.42	.00	1.09	8.00	1.500	8.999	.00	9	.0
		I		ļ					ļ				-	 -	
8.269	.0020	1	,	•	•	.0145	.12	.70	1.97	1.29	.013	.00	.00	BOX	
0.200	1.0020	1		ŀ	1				1			1	1		
1148.855	8,389	, 664	9.052	52.00	9,79	1.49	10.54	.00	1.09	8.00	1.500	8,999	.00	В	.0
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7.971	.0020	•	•			.0168	.13	.66	2.12	1.29	.013	.00	.00	BOX	
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1156.826	8.405	.633	9.038	52.00	18.27	1.64	10.58	.98	1.09	8.00	1.500	8.000	.00	. 0	e.
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7.664	.0020					.0195	.15	.63	2.27	1.29	.013	.20	.08	вох	
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1164,498	8.420	.604	9.024	52.00	10.77	1.80	10.82	.24	1.09	8.00	1.500	8.000	.00	, 6	.0
-			-		[l- <u>-</u>	!					-	
. 266	.0051					.0211	. 01	.84	2.44	.95	.813	. 98	.00	BOX	
	1			1	١.			١	1	1	1 2 500	8.000	.09	8	.0
1164.756	8.421	.602	9.024			1.81	10.83	. 24	1.09	8.00	1,500				.0
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8.612	.0051		_			.0228	, 20	.84	2.45	.95	.013	.00	.00	BUX I	
	[1 44 77	4 00	11.03	,27	1.09	8.00	1.500	8.000	.00	່ ອ	.0
1173.368			9.040		-	1.99								1-	
				-	I	.0265	.21	.84		.95	.013	.00		BOX	
8.023				ht e	и с ы -		الد. SIGN Versi			. , , ,	.013	.00	100	PAGE	3
♠ FILE: 62	4_PR-AZ-WS	w	Deney	Package S				··· +4.00							_
			Program	Patkage 3	ELF CIT EMEDY	INCL. TO	T.A.								

Program Package Serial Number: 1841 WATER SURFACE PROFILE LISTING

Date: 6- 6-2019 Time:10:22:23

"3111 MANCHESTER" HYDRAULICS
Prepared By: URBAN RESOURCE CORPORATION
SD LINE 'A' Filename: 624_PR-A.wsw

*************************************	*****	******	*******	*****	*****	*****	******	****	******	******	*****	****	****	****
	Invert	Deoth I	Water	0 1	Vel	Vel	Energy	Super	Critical	Flow Top	Height/	Base Wt		No With
Station	Elev	(FT)	Elev	(CFS)	(FPS)	Head i	Grd.El.	Elev	Depth	Width	DiaFT	or I.D.	ZL	Prs/Pip
	1.	1 1		` ' '		- i - i -	- i		j		j	i		1
L/Elem	Ch Slope		i	i	•	SF Ave	HF I	SE Doth	Froude N	Norm Do	"N"	X-Fall	ZR	Type Ch
*******		 ********	*****	******	*******	******					******	*****	****	*****
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1404 304	8,506	.548	9.054	52.88	11.87	2.19	11.24	. 29	1.09	8.99	1.500	8.000	.00	9 .6
1181.391	0.360	ا - ا			1		-1		l	I		f 1	l –	1-
-	ļ	i - 1			- 1				+	r	t .			•

								624_PR	-A2.OUT						
7.494	.0051					.8309	- 23	.84	2.83	.95	.013	.00	.00	BOX	
1		i	1	1			i	,				1		1	_
1188,886	8.544	. 522	9.066	52.00	12.45	2.41	11.47	.32	1.09	8.00	1.500	8.000	.00	. 0	.0
- -	-1-	- ·	- -	- -	 [-							l		-	
7.014	.0051					.0359	. 25	.84	3.04	.95	.013	.00	.00	KO8	
1	- 1		1			[* 500		00	1	.0
1195.900	8.580	.498	9.078		13.05	2.65	11.72	.00	1.09	8.00	1.500	8.000	.00	, 0	.89
- -	-1-	- -	- -		- -	-] -	-			-	.013	.00	.00	BOX	
JUNCT STR	.0057					.0217	.12	1.44	3.26	Yeron			.00	DUA	
				WARNING	- Junct	con Ana	ilysis - Cl	nange in	coanner	iype	1	1 1		1	
1221 222	0.740		40.000	=1 00	7.96	.98	11.84	.15	2.26	3.36	3.500	.699	.00	1	. 0
1201.200	8.610	2,248	10.858	52.00	7.36	- -						1		1.	
- +		- -	-1-	- 1 -	"1"	.0048	.14	2.39	1.01	2.25	.013	.00	.00		
28.088	.0048	ı	ı	:		10040		!		1	1	1 1		1	
1229.288	8.745	2.248	18.994	52,00	7.96	.98	11.98	.15	2.26	3,36	3.508	.000	.00	1	ß.
.4229.400	- -	- -	- -	-!-	-1-	-1-							-	1-	
19.512	.0048	,	ļ		•	.0050	, 30	2,39	1.01	2.25	.613	.00	.00	PIPE	
12.5.5.	1	ı	1			1	- 1	1				1 1		1	
1248.800	8,840	2.190	11.030	52.80	8.21	1.05	12.08	.60	2.26	3.39	3.500	.000	.00	1	.0
- -	- -	- -	-1-	-!-	- -	-] -	-1				r			-	
14.178	.0052					.0032	.07	2.19	1.06	2.19	.013	.00	.00	PIPE	
1	1	l	Į.	į		1	ĺ				ļ			1	_
1262.978	8.914	2.198	11.104	52.00	8.21	1.05	12.15	.00	2.26	3.39	3.500	. 000	.00	1	.0
- -	- -	- -	- -	- (-	- -	- -						- <u>-</u>		-	
22,252	.0052					.0051	.11	2.19	1.86	2.19	.013	.08	. 09	PIPE	
ŧ			ı							i	7 500	1 000		١,	
1285.230	9.030	2.237	11.267	52.00	8.01	1.00	12,26	.15	2.26	3.36	3.500	.000	.00	1	.0
- -	- -	-1-	- i -	- -	- -		•					 .00	- ,00	PIPE	
40.039	.0049				یم یا م	.0049	.20	2.39	1.02	2.24	.013	90,		PAGE	4
♠ FILE: 624_F	R-AZ.WSW		Program Par				GN Versio	11 44.00						FAGE	4

Program Package Serial Number: 1841
WATER SURFACE PROFILE LISTING

WATER SURFACE PROFILE LISTING
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Date: 6- 6-2019 Time:10:22:23

"3111 MANCHESTER" HYDRAULICS
Prepared By: URBAN RESOURCE CORPORATION
SD LINE 'A'

filename: 624_PR-A.wsw

		A D. S. B. M. D. B. S. S. B. S. S. S. S. S. S. S. S. S. S. S. S. S.		 				*****	*******	 *******	******	*******	****	*****	***
Station	Invert Elev	Depth (FT)	Water Elev	Q CFS)	Vel (FPS)	Vel Head	Energy Grd.El.		:	Flow Top Width		Base Wt or I.D.		No Wt Prs/F	
L/Elem *******	Ch Slope	 ********	*****	**********	*******	5F Ave	HF ******	SE Doth	Froude N	Norm Dp	"N" ******	X-Fall	ZR *****	Type ****	Ch
1325.269	9,226	2.237	11.463		8.01	1.00	12.46	.15	2.26	3.36	3,500 -	.000	.00 - I	1 1	.8
15.861	0049 .0049		- - 	 - :	!	.0050	.07	2.39 I	1.62	2.24	.013	.00	,	PIPE	
1340.330	9.306	2.217	11.517 	52.00 :	8.89	1.02	12.53	.01 -	2.26	3.37	3.500	.009	.00	' 1 -	,0
77.730	.0050		' [!	•	.0050	.39	` 2.23 !		2.22	.013	.09	.00	`₽1PE 	
1418.060		2.217	11.908	52.00 -	8.09 j	1.02	12.92 -	.01	2.26	3.37	3,500	4	.00 -	J	.0
17.730	. 0850 			!		.0650	. 9 9	2.23 	1	2.22	.013	.09 	.00	 PIPE	
1435.790	9.780	2.227	12.007	52.00	8.05	1.01	13.01	.01	2.26	3.37	3.500	.000	.00	3.	.₽

	62	4_PR-A2.OUT
_ -	- -	
140.985 .0050	. aese . 70 z	.24 1.02 2.23 .013 .00 .00 PIPE
1,40.983	! ! !	
1576.775 10.480 2.227 12.707	52.89 8.85 1.01 13.71 .	91 2.26 3.37 3.500 .000 .00 1 .0
- -		_
8,935 .0050	.0049 .04 2	.24 1.02 2.23 .013 .00 .00 PIPE
WALL ENTRANCE		
1584.810 10.520 2.256 12.776	20,00	01 2.26 3.35 3.500 .000 .00 0 .0
- -	-[-	~ - -
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624 PR-18C.EDT

												024_Pt	(-19C-)	EDI						
FILE:	624 PR	-18C.	WSW				WSP	GW -	EDIT L	ISTING	- Vers	sion 14	.06			Date:	5-31-2	019	Time:11:	6:21
						MA	TER SURF	ACE PRO	OFILE -	CHANNE	E DEFI	INITION	LISTI	NG					PAGE	1
CARD	SECT	CHN	NO	OF A	VE PIER	HEIGHT	1 BASE	ZL	ZR	INV	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CODE	NO:	TYPE	PTE	R/PIP I	WIDTH		ER WIDT	Ή		DROP										
C.021.			- 20.00	,																
CD	1	4		1		1.500														
CD	2	4		1		3.500														
CD.	1 2 3	3		e	. 000	4.000	6.000	.000	9 .99	0 .0	Ð									
								[ed	SPG	W									PAGE NO) 1
					WATER	SURFACE	PROFILE	- TITLE	CARD	LISTING										
HEADIN	G LINE	NO 1	TS	-																
					"311	1 MANCHE	STER" HY	DRAULIC	CS .					9						
HEADIN	G LINE	NO 2	15	_																
					Prep	ared By:	URBAN F	ESOURCE	CORPO	RATION										
HEADIN	G LINE	NO 3	15	_	•	-														
					SD L	INE '18C					Filer	1ame; 6	24_PR-	180.WS	lej					
								W	S P G	lal l									PAGE NO	2
					WATER	SURFACE	PROFILE	- ELEME	ENT CAR	D LISTI	NG									
ELEME	NT NO	1 I	S A	SYSTEM	OUTLET	*	*	*												
				U/S DAT	TA ST	ATION	INVERT	SECT						ki	S ELEV	•				
					10	00.000	9.010	1							9.83	.8				
ELEME	NT NO	2 I	5 A	REACH		*	+	*												
				U/S DAT	TA ST	ATION	INVERT	SECT			N				R.A	DIUS	ANGL	F.	ANG PT	MAN H
					10	90.000	9,190	1			013					999	.000		.000	0
ELEME	NT NO	3 I	SA	WALL	ENTRAN	CE		*												
				U/S DAT	TA 517	ATTON	INVERT	SECT		F	₽									
					10	90.000	9.100	1			013									
ELEME	NT NO	4 I	S A	SYSTEM	HEADNO	RK5		×				4								
				U/S DAT		ATION	INVERT	SECT						M	S ELEV	•				
						90.000	9.100	1							9.100					

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624_PR-18C.OUT

• FILE: 624_PR-18C.WSW W S P G W - CIVILDESIGN Version 14.06

Program Package Serial Number: 1841

WATER SURFACE PROFILE LISTING

"3111 MANCHESTER" HYDRAULICS 6

Prepared By: URBAN RESOURCE CORPORATION

SD LINE '18C' Filoname: 624 PR-18C.wsw

و علق دار الراب علي المراب المراب المراب المراب المراب المراب المراب المراب المراب المراب المراب المراب المراب			SD LINE '	180'			Filer	name: 62	4_PR-18C-1	WSW *******	*****	******	****	*****	
Station	Invert Clev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) 	Vel Head			Critical Depth	₩i.dth				No Wth Prs/Pip	
L/Elem *******	Ch Slope	******	******	******	- " *******	SF Ave		5E Dpth ******	Froude N	1	"N" ******	X-Fall	ZR *****	Type Ch ******	
1000.000		. 568	9.578		3.68	.21	9.79	.00	.57	1.46	1.500	.000	.80	1 .000	Line'D'
.352	.0010		- <i>-</i> 	}-	1	.0947	.00	.57	1.00	.91 !	.013	.69 1	.90	PIPE	
1000.352	9.010	.589	9.599		3.51 	.19	9.79	.00	.57	1.46	1,500 -	.609	.00	1 .0	
1.280					1	.0041	.01	.59		.91	.013	. 00 I	.00	PIPE	
1001.632	9.012	.610	9.622		3.35 	.17	9.80	.20 	.57 	1,47	1.500	.000 	.øə	1 .0	
2.489				1	1	.0036	. 01	.61	.87	.91	.013	.00	.00	PIPE 	
1084.112	9.034 	.632 	9.646	2.26		.16	9.80	.09	.57	1.48	1.500	.000	.00	'1 .0 !-	
4.063	' 00100 '	·	I	1	' ' !	.0 0 32	.01	.63		.91	.013	.60		PIPE 	
1008.175	9, 0 18	.655	9.674	2.26		.14	9.82	.00	.57	1.49	1.500	.608	.00	1 .0	
6.292			· !	1	, , !	.0028	,02	.65	.76	.91	.013	` .00´	.00	PIPE	
1014.466		.680 	9.7 0 4	2.2G		.13	9.84	.00	.57	1.49	1.500	.000 	- 99	`1.0 -	
9.340			· 	L	' ' I	.0024	.02	. 68	.71	.91	. 01 3	.99.	.00	PIPE	
1023.806	9.034	.705	9.739	2.26		.12 ·	9.86	.00	.57	1.50	1.500	.080	.00	-	
13.710	.0010				•	.0022	.03	.71	. 56	.91	. 01 3	.80	.00	PIPE	
1037.516	9.048	.732	9.779	2.26	2.64 	.11 	9.89	.00 	.57 	1,50	1.500	.000	.90	I ,0 -	
20.217	.0010		ı	!		.0019	.04	.73	.62 	,91	.013 	.80 	,00	PIPE	
1057.732 -		.760 	9.827	2.26 		.10 		.00 	.57 		1.500 	.000 		1 .0 -	
30.328	.0010					.0017	.05	.76	, 57	.91	.013	.00	.00	PIPE	
♣ FILE: 624		iw!	Program	W S Package Se		CIVILDES	IGN Versio							PAGE 2	
			=	=	WATER	SURFACE	PROFILE LI	STING			Date: 5-3	31-2019	Time:1	1: 6:23	
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PAGE 1

Date: 5-31-2019 Time:11: 6:23

624_PR-18C.OUT

S	tation	₽]ev	(FT)	Elev	(CFS)	(FPS)	Head	Grd,El.	Elev	Depth	Width	DiaFT	or I.D.	ZL	Prs/	γip
	- 1		- -	-	1			!	t -				1		·	<u> </u>
L.	/Elem	Ch Slope	ļ		1		SF Ave				Norm Dp		X-Fall		Type ****	
:	**	*****	* ******	*******	*****	*****	*****	*******	******	*******	******	****	*******	*****	1 1111	
					1	2 42	20	9.98	. 69	.57	1.50	1.500	.000	.00	i 1	а
1	888.060	9.098		9.887	2.26	2.49	.09					1.,00	1		1-	••
	1.940	.8910	- -	1-	1-	į	.0016	.00	.79	.53	.91	.013	.00	.00	PIPE	
t.d.		RANCE					**									
			1	I	1			1	l		1			į –	1	
1:	290.000	9.308	.791	9.891	2.26	2.39	.09	9.98	.00	.57	1.50	1.500	.000	.00	. 0	.0
	-		-	1				-		-				-	i -	

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W S P G W - CIVILDESIGN Version 14.06

PAGE 1

Date: 5-31-2019 Time:11: 6:23

Program Package Serial Number: 1841 WATER SURFACE PROFILE LISTING

"3111 MANCHESTER" HYDRAULICS Prepared By: URBAN RESOURCE CORPORATION SD LINE '18C'

Filename: 624_PR-18C.wsw

*****	***	*******	******	*****	******	******	*****	*******	******	******	******	****	*****	****	***
Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.		Critical Depth	Flow Top Width	DiaFT	Base Wt or I.D.		No Wt Prs/F	
L/Elem *******	- Ch 5lope ******	 **#****	******	******	*****	SF Ave ******		SE Dpth	Froude N	Norm Dp	"N" ******	X-Fall ******	ZR ****	Type ****	
1000.000	9.010		9.724		4.22	.28	10.00	 00,	.71] 1.50	1.500	.888	1	1 1	.0
 .440	.0010	[-	 	 0050	.00	 .71 	1.00	1.32	 .013 	 .08		PIPE	
1000.440	9.018		9.751	3.50	4.93	.25	10.00	. 290 [.71	1.50	1.500	.000	.00	1	.0
1.615	.0010	[]		•	; -	.0044	.01	.74	.93	1.32	.013	.60	.00	PIPE	
1002.055	9.012	. 769	9.781		3.84	.23	10.01	.00	.71	1.50	1.500	.008		1	.0
3.135	.0010	 				.6038	.01	 .77	.87	1.32	.013	.08	- .00	PIPE	
1005.190	9.015	.799	9,814		3.66	.21 	10.02	.09	.71	1.50	1.500	.000		1	,0
5.193 _.	.0010		!	[]		.0034	.02	.89	.81	1.32	.013	.00	.00	PIPE	
1010.383	9.020	.830	9.850		3,49	.19	18.04	.00	.71	1.49	1.500	.000		1	.9
7,896	.0010] 	- -	!- "		 0030	.02	.83	.75	1.32	.013	.08	.00	PIPE	
1018.279	9.028	.863	9.891	3.50	3.33	.17	10.06	.09	.71	1.48	1.500	.000	.00	1	.0
- 11.674	.6016		-			 - 0026	.03	.85	.70	1.32	.013		.00	PIPE	
1029.953	9.040	 898	9.937	3.50	3.17	. 1 6	10.09	.69	.71	1.47	1.500	.000	.00	1	.8
- 16.880	8010	:				 .0023	.04	.90	.65	1.32	.013	.09	- .00	PIPE	
1046.833	9,057	.934	9,991	3.50	3.02	.14	10.13	.00	.71	1.45	1.500	.000	.00	1	.ø
-												[-	-	

								624_PR	-18C.OUT						
24.409	8.tea.	1	ı	ı		.0021	-05	.93	.50	1.32	.013	.00	-99 	P IP €	
1071.242	9.081	.973	10.955	3.50	2.88	.13	10.18	. 09	.71	1.43	1.500	900.	.00	1	.0
- 18.758	 .0010				[-	.0019	.84	.97	.55	1.32	.013	.08	.08	PIPE	
↑ FILE: 624	4PR-18C.WS	id	Danama	W 5 Package Se			SIGN Versio	on 14.06						PAGE	2
					WATER S		PROFILE LI	STING	_	;	Date: 5-3	31-2019	Time:1	1: 6:2	.3
			1 MANCHEST epared By:			PORATIO	N.		0						
			SD LINE '1					ame: 624	PR-18C.		****	*******	*****	****	**
********	.********* Invert	Depth	Water	0 1	Vel	Vel	Energy	Super	Critical	Flow Top	Height/	Base Wt	1	No Wt	:h
Station	Elev	(FT)	Elev	(CFS)	(FP5)	Head	Grd.Ěl.	Elev	Depth	í	DiaFT	or I.D.	ZL	Prs/P	ip
L/Flem	Ch \$lope				'	SF Ave	HF	SE Opth	Froude N	Norm Dp	"N"	X-Fa11		Туре	
*******		******	*****	****	******	*****	*******	*****	****	*****	* 北市 * 汕 李 *	*****	****	*****	**
WALL ENT	IKANILE] 1	I	Į	J			-				l]	1	1	
1090.000	9.120	.998 	10.098	3,50	2.80	. 12 	10.22	.00	.71	1.42	1.500	.008	.00 -	- -	.0
•	11		,	'						•	•		'	PAGE	1
# FILE: 624	4_PR-18C.WS	H.	Program	W S Package Se			SIGN Versio 1	on 14.86						PAGE	1
				u u	WATER S		PROFILE LI	STING			Date: 5-	31-2019	Time:1	1: 6:2	.3
			1 MANCHEST epared By:			RPORATIO	N.		9						
	and the standards the standards the standards		SD LINE '1	86	******	*****	F11e: *******	Pane: 624	PR-18C.	√5W *******	******	******	*****	****	**
*******	********** Invert	******** Depth	**************************************	Q *******	******** Vel	******* IeV	Filer ******* Energy	*****	PR-18C ********** Critical	******** Flow Top	Height/	Base Wt		****** No Wt	
********* Station	********* Invert Elev	*****	*******	******	(FPS)	Head	********* Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width		Base Wt		****** No Wt Prs/P	
-		******** Depth	**************************************	Q (CFS) 	(FPS) -	Head - SF Ave	********* Energy	Super Elev Elev SE Dpth	Critical Depth Froude N	Flow Top Width Norm Dp	Height/	Base Wt		1	îp
-	Elev -	******** Depth	**************************************	Q (CFS) 	(FPS) -	Head -	********* Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width Norm Dp	Height/ DiaFT -	Base Wt or I.D.	 ZL 	Prs/P	îp
L/Elem	Elev 	********** Depth (FT) *********	**************************************	Q (CFS) *******************************	(FPS) - ****** * 4.41		********* Energy Grd.El.	Super Elev Elev SE Dpth	Critical Depth Froude N	Flow Top Width Norm Dp	Height/ DiaFT - "N" *******	Base Wt or I.D. X-Fall ******	ZE ZR *****	Prs/P Type	îp
L/Elem ************************************	Elev - - Ch Slope ************************************	********** Depth (FT) *********	**************************************	Q (CF5)	(FPS) -		********** Energy Grd.El ^ HF *******	******** Super Elev - SE Dpth ******	********* Critical Depth Froude N ******	Filow Top Width Windth Norm Op	Height/ DiaFT - "N" ******	Base Wt or I.D. X-Fall ******	 ZL ZR *****	Prs/P Type	ip Ch
L/Elem ******** 1200.000 - .502	Elev - Ch Slope *********** 9.010 - .0010	Depth (FT)	Water Elev	Q (CF5) *******************************	(FPS) - ****** * 4.41 -	Head - - SF Ave ******* .30	********** Energy Grd.El HF ******** 10.08	Super Elev SE Dpth *******	********* CriticaI Depth Froude N ******* .77	******** Flow Top Width	Height/ DiaFT - "N" "N" 1.500 013	Base Wt or I.D. X-Fall *******	ZL - ZR ***** 08	Type **** 1 PIPE	Ch **
L/Elem ************************************	Elev 	********** Depth (FT) *********	Hater Elev 9.775	Q (CF5) *******************************	(FPS) - ****** * 4.41	Head -	********* Energy Grd.El	Super Elev SE Dpth ******* .00 .77 .00 .	*************** CriticaI Depth - Froude N ******* .77 - 1.00 .77	******** Flow Top Width -	Height/DiaFT - "N" ******* 1.500 013 1.500 013	Base Wt or I.D. X-Fall ******* .000 .00	ZL ZR ZR ****** .0800	Prs/P Type ***** 1 PIPE 1	ip Ch
L/Elem ********* 1200.000 - .502	Elev 	********** Depth (FT) - - - - - - - -	Hater Elev 9.775	Q (CF5) *******************************	(FPS) - ******* * 4.41 -	Head - - SF Ave ******* .30	********** Energy Grd.El HF ******** 10.08	Super Elev SE Dpth *******	********* CriticaI Depth Froude N ******* .77	******** Flow Top Width	Height/ DiaFT - "N" "N" 1.500 013	Base Wt or I.D. X-Fall *******	ZL - ZR ***** 08	Type **** 1 PIPE	Ch **
L/Elem ********* 1200.000 .502 1000.502	Elev	**************************************	%*************************************	Q (CF5) ********** 4.00 4.00	(FPS) - (SF Ave ****** .38 .0851 .278045	#******** Energy Grd.El. HF ******** 10.08 10.08 10.08	********** Super Elev	**************************************	******** Flow Top Width -	Height/DiaFT - "N" ******* 1.500 013 1.500 013	Base Wt or I.D	ZL ZR ZR ****** .0800	Prs/P Type ***** 1 - PIPE 1 - PIPE	Ch **
L/Elem ********* 1200.000 .502 1000.502 - 1.728 1002.229	Ch Slope 9.010 0010 9.011 9.011 9.012	**************************************	%*************************************	Q (CF5) ********** 4.00 4.00	(FPS) - ******* * 4.41 - 4.21	SF Ave ****** .38 .0851 .278045	#******** Energy Grd.El. HF ******** 10.08 10.08	********** Super Elev	**************************************	******** Flow Top Width	Height/ DiaFT "N" ******* 1.500 013 1.500	######################################	ZL ZR ***** .00 .00 .00 .00	Prs/P Type ***** 1 - PIPE 1 - PIPE	ip Ch ** .0
L/Elem ******** 1200.000502 1000.502 - 1.728 1002.229 3.375	9.019	**************************************	%*************************************	Q (CFS)	4.41 	Head -	#******** Energy Grd.El. HF ******** 10.08 10.08 10.09 .01	********* Super Elev	**************************************	Flow Top Width - Norm Dp ******* 1.50 - 1.50 - 1.50 - 1.50 - 1.50 - 1.50	Height/ DiaFT "N" ******* 1.500 	Base Wt or I.D	ZL ZR ZR ZR ZR ZR ZR ZR ZR ZR ZR ZR ZR ZR	Prs/P Type ***** 1 PIPE 1 PIPE 1 PIPE	ch ** .0
L/Elem ********* 1200.000 .502 1000.502 - 1.728 1002.229	9.010 0010 9.0110 9.0110 9.0110 9.0112 0010 9.0112 9.0110	**************************************	%*************************************	Q (CFS)	4.41 	SF Ave ******* .38 .0851 .27 .8045 .25 .28	********* Energy Grd.El. HF ******** 19.08 10.08 10.09 .01 10.10	********** Super Elev	**************************************	******** Flow Top Width	Height/ DiaFT "N" ******* 1.500 1.500 1.500 1.500 1.500	Base Wt or I.D	ZL ZR ZR	Prs/P Type ***** 1 - PIPE 1 - PIPE 1 - PIPE 1 - PIPE	ip Ch ** .0
1200.000 - 1200.502 1000.502 1.728 1002.229 3.375	9.010 0010 9.0110 9.0110 9.0110 9.0112 0010 9.0112 9.0110	**************************************	%*************************************	Q (CFS)	4.41 	Head -	#******** Energy Grd.El. HF ******** 10.08 10.08 10.09 .01	********* Super Elev	**************************************	Flow Top Width - Norm Dp ******* 1.50 - 1.50 - 1.50 - 1.50 - 1.50 - 1.50	Height/ DiaFT "N" ******* 1.500 	Base Wt or I.D	ZL ZR ZR	Prs/P Type ***** 1 PIPE 1 PIPE 1 PIPE	ch ** .0
L/Elem ******** 1200.200502 1000.502 - 1.728 1002.229 3.375 1005.605 - 5.581 1011.186	9.019 9.010 9.010 9.011 9.010 9.010 9.010 9.010 9.010 9.010 9.010 9.010 9.010	**************************************	9.775 9.896 9.838	Q (CFS)	4.41 - 4.21 - 4.01 - 5.82	SF Ave ******* .38 .0852 .0854 .27 .0944 .23 .0835	********* Energy Grd.El. HF ******** 10.08 10.08 10.09 10.10 10.10 10.10 10.10	********* Super Elev	**************************************	Flow Top Width - Norm Dp ******* 1.50 - 1.50 - 1.50 - 1.50 - 1.50 - 1.50 - 1.49 - 1.50 - 1.49 - 1.50 - 1.48 - 1.50	Height/ DiaFT "N" "****** 1.500	Base Wt or I.D. X-Fall ****** .000 .000 .000 .000 .000	ZL ZR ZR ZR ZR ZR ZR ZR ZR ZR ZR ZR ZR ZR	Prs/P Type ***** 1 - PIPE 1 - PIPE 1 - PIPE 1 - PIPE 1 - PIPE 1 - PIPE	ch ** .0
L/Elem ******** 1200.000502 1000.502 - 1.728 1002.229 - 3.375 1005.605 - 5.581	9.019 9.010 9.011 9.010 9.010 9.011 9.010 9.010 9.010 9.010 9.010 9.010 9.010	**************************************	9.836 9.836 9.874	Q (CFS)	4.41 - 4.21 - 4.01 - 3.82 - 3.65	SF Ave ******* .38 .0852 .27 .0945 .23 .0948	********* Energy Grd.El. HF ******** 10.08 10.08 10.09 10.10 10.10 10.10 10.10	********* Super Elev SE Dpth ****** .00 .77 .00 .88 .00 .83 .00 .86 .00	**************************************	Flow Top Width - Norm Dp ******* 1.50 - 1.50 - 1.50 - 1.50 - 1.50 - 1.50 - 1.50 - 1.50 - 1.50	Height/ DiaFT "N" "****** 1.500	Base Wt or I.D. X-Fall ****** .000 .000 .000 .000 .000	ZL ZR ZR ZR ZR ZR ZR ZR ZR ZR ZR ZR ZR ZR	Prs/P Type ***** 1 - PIPE 1 - PIPE 1 - PIPE 1 - PIPE 1 - PIPE 1 - PIPE	.0 .0
1000.000 	Cf. Slope	**************************************	9.775 9.896 9.838	Q (CFS)	4.41 - 4.21 - 4.01 - 5.82	SF Ave ****** .38 .0851 .27 .0045 .25 .0046 .23 .0035	********* Energy Grd.El. HF ******** 10.08 10.08 10.09 10.10 10.10 10.10	********** Super Elev	**************************************	******** Flow Top Width	Height/ DiaFT 'N' ****** 1.500 1	Base Wt or I.D	ZL	Prs/P Type ***** 1 - PIPE 1 - PIPE 1 - PIPE 1 - PIPE 1 - PIPE 1 - PIPE	.0 .0

								624_PF	7-18C.OUT						
12.512	.0010	- -	-	- -	[.0927		.93	 : .69	· 1,50	.013 .013	.00	.00	PIPE	
1032,151	9.842	.969				.17	10.18	.00	. <i>77</i>	1,43	1.500	.000	.98 -	1	.0
18.008	.0010	;- " !	1	1	i I	.0024	1	.97	1	1.50	.013	.00	.00	PIPE	
1050.159	9.860	1.050				.16	10.23	.00	`.77 	1.41	1.500 [.000	` .00 -	1 -	.0
25.995	.0010	I		I	I	.0022	, 06 [1.01	.59	1.50	.013	.00	` .00 	PIPE	
1076.153				4.00	3.01	•		•	.77	1.37	1.500		.00] -	.0
13.847 • FILE: 62		SW	r				SIGN Versi	1.85 on 14.06	-	1.50	.013	.00	.00	PIPE PAGE	2
			Program	Package S			PROFILE L	TSTTNG			Date: 5-	31-2019	Time:1	1: 6:2	23
			11 MANCHES repared By		ULICS				9						
at all and also also also also also also			SD LINE					name: 62	4_PR-18C.		****	******	der als also also also also	******	444
*****	Invert	Depth	Water	l 0	l Vel	Vel	Energy	Sugar		Flow Top	:Haight/	lRaco Wt		No Wt	th.
Station	Elev	(FT)	Elev	(CFS)	(FPS)	Head		Elev	Depth	Width				Prs/F	
L/Elem *******	Ch Slope	*******	 ********	 	Ì '	SF Ave	₽₽	SE Opth	Froude N	Norm Dp		X-Fall		Type	
WALL EN	ŧ	; I	1	· [ı	1	, !	!	1	1	1	•	, !	
1090.000	9.100	1.075	18.175	4.89	2,95	.14	, 10.31 	.00	.77 {	1.35	, 	.000	.00	-	.0
↑ ↑ FILE: 62	4 PR-18C.W	Sivi		W 5	P G W -	CIVILDE	SIGN Versi	on 14.06						PAGE	1
	•••		Program	Package S			41 PROFILE L	TSTING			Date: 5-	31-2019	Time:1	1: 6:2	23
			11 MANCHES repared By		JLICS			***	9	,	<i>-</i>		124-212	012	
		P	SD LINE '		SOURCE CL	MPUMAIL		name: 624	4 PR-18C.	wsw					
*******	*****	****	*************************************	·***********	*****	******	********	*****	*****	****	*****	*****	*****	*****	**
Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.		Critical Depth	Flow Top		[Base Wt]	ŽĿ	No Wt	
- Station	: '''			- (6.5)			-				-			11.27.	*1
L/Elem	Ch Slope					SF Ave	HF	SE Doth	Froude N	Norm Dp	"N"	X-Fall	ZR	Туре	Ch
******	******	*****	*******	********* [[******* [******	******* 	****	********	}********	******* 	******	*****	****	**
1000.000	9.910	.984	9,914	5.50	4.94 	.38	10.29 	.00	',98 	i 1.47 I	1.500	.020	.09 -	1	,0
.586	.0010		!	' I	' ' I	.0955	.90	.90	1.00	1.50	.013	.00	.90	PIPE	
1000.586	9.911	.941	9.952	5.50	4.71 	. 34	20.30	.00	' ,90 	1.45	1.500	.000	.00	1.	. 0
2.869	.0010			_	· · · · · · · · · · · · · · · · · · ·	. 0050	.01	.94	.93 	1.50	.013 	.00	.00	PTPE	
1002.646	9.013	.981	9.993	5.50	` 4.49 	.31	10.31	.00	.98 		1.500	.000	.00	1	.0
4.002	.0010		,		. ,	.0045	, 82	.98	.85	1.50	.013	.00	.60	PIPE	
	(l		l	ţ į	I	I	l			F	

624 PR-18C,OUT .90 1.40 1.500 .000 .00 1 .0 1006.648 9.017 1.023 10.040 5,50 4.28 . 28 10.32 .00 - | -- -.8040 .03 1.02 .013 .00 PIPE 6.579 0018 10.092 10.35 . 99 1.500 .000 .00 1 .0 1013.227 1.059 5.50 4.08 . 25 9.023 -1-. 04 .00 PIPE .0035 1.07 1.50 .013 10.132 .0010 1023,359 9.033 1.118 10.151 5.50 3.89 .24 10.39 .90 1.31 1.500 .00 1 .00 PIPE .0032 .05 1.50 .013 15.009 .0010 1.500 .00 10.220 5.50 3.71 ,21 10.43 .00 1.24 .008 1 1038.368 9.048 1.172 .00 PIPE .0029 .86 1.17 1.56 .013 21.945 .0010 .00 1.500 1060.314 9.070 1.232 10.303 5.50 3.54 .19 10.50 .00 1.15 . മമമ 1 .00 PIPE 29.685 .0026 .08 1.23 1.50 .013 .0010 WALL ENTRANCE PAGE ♠ FILE: 624_PR-18C.WSW W S P G W - CIVILDESIGN Version 14.06 Program Package Serial Number: 1841 WATER SURFACE PROFILE LISTING Date: 5-31-2019 Time:11: 6:23 "3111 MANCHESTER" HYDRAULICS Prepared By: URBAN RESOURCE CORPORATION SD LINE '18C' Filename: 624 PR-18C.wsw Vel Vel Energy | Super |Critical|Flow Top|Height/|Base Wt| No Wth Kater (FPS) Grd.El. Elev Depth | Width | Dia.-FT or I.D. | ZL Prs/Pip Elev (CFS) Head Station Elev SF Ave SE Doth Froude N Norm Do "N" X-Fall ZR Type Ch L/Elem | Ch Slope ***** ****** .90 10.398 10.58 .00 1.500 .000 .00 9 1090.000 5.50 3.38 .18 1.02 9.100 1.298 W S P G W - CIVILDESIGN Version 14.06 PAGE ♠ FILE: 624_PR-18C.WSW Program Package Serial Number: 1841 WATER SURFACE PROFILE LISTING Date: 5-31-2019 Time:11: 6:23 "3111 MANCHESTER" HYDRAULICS Prepared By: URBAN RESOURCE CORPORATION SD LINE '18C' Filename: 624 PR-18C.wsw Energy | Super | Critical | Flow Top | Height / | Base Wt | No Wth Q vel. Vel Invert Depth Water Grd. El. | Elev | Depth | Width | Dia. - FT or I.D. | ZL | Prs/Pip (FPS) (FT) Elev (CFS) Read Station £lev SF Ave ISE Onth Froude N Norm Do "N" | X-Fall| ZR L/Flem |Ch Slope Type Ch ******** ****** ***** 10.29 1.47 1009.090 9.010 .985 9.915 4.94 .38 .00 1.500 .000 .00 1 .8 .0057 .00 .91 .00 PIPE .579 .0010 1.50 .013 .00

. 35

.0050

10.30

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1.50

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.00 PIPE

1000.579

2.076

9.011

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.942

9.953

5.51

								624_PR	-18C.OUT					,	
1002.655		.982	9.995 	 \$.51 	 4. 4 9 -	.31	10.31	.00	 .91 	 1,43 	1.500	.000	,98 -] 	.0
4.021	1	F I	1		,	.0045	.02	.98	.85	1.50	.013	.00	. 99	PIPE	
1006.676			10.041	5.51	4,29	.29	10.33	.00	.91	1,40	1.588	.086	. 20	1.	. 8
6.633	•		- -	j	-	.0040	.03	1.02	•	1.50	.013	.00	.98	PIPE	
1013.309	9.023	1.070	10.093	5.51	l . 4.649 .	. 26	10.35	.00	.91	1.36	1.500	.000	.96	1	.0
10.153	.0010	-	-	- -	[·	.0035	.04	1.07	.72] 1.,50	.013	.89	00	PIPE	
1023.462	9.033	1.119	10.153	5.51	3.90	. 24	10.39	.00	.91	1.31	1.500	.000	.66	1.	.0
15.028	,	-	-		-	0032	.05	1.12	.65	1.50	.013	.00	.60	PIPE	
1038.490	9.648	1.174	10.222	5.51	3.71	. 21	10.44	.00	.91	1.24	1.500	,200	.00	1	.0
- 22,010	.0010	ļ- -	-	-	[-	 0029	.06]- 1.17	.68	1.50	.013	.90	.00	- PIPE	
1060,500	9.070	1.234	10.305	5.51	3.54	,19	10.50	.08	.91	1.15	1.500	.000	. 99	1	.0
29.50 0	,	-	-	-	-1-	.0026	.08	1.23	.54	1,50	.013] .09	.00	PIPE	
WALL EN	TRANCE				.	CTLIT I DE I		11 00						PAGE	-
♣ FILE: 62	4_PR-18ζ.W	1514	Program	Package Se			SIGN Versi H	07 14.06						PAGE,	4
		# D 4 4	•	_	WATER S		PROFILE U	ESTING			Date: 5-3	31-2019	Time:1	1: 6:2	23
			L1 MANCHEST repared By:	TER" HYDRAL URBAN RES	WATER S JLICS	SURFACE	PROFILE LI		8 • BB-18C		Date: 5-3	31-2019	Time:1	1: 6:2	23
******	******		L1 MANCHEST	TER" HYDRAL URBAN RES	WATER S JLICS	SURFACE	PROFILE LI		0 1_PR-18C.		Date: 5-3	33-2019 *******	Time:1	1: 6:2 *****	23
*******	********* Invert	P1 ********* Depth	11 MANCHEST repared By: SD LINE ': ************************************	TER" HYDRAU : URBAN RE: 18C' !********	WATER S JLICS SOURCE COF ************************************	SURFACE RPORATIO ******* Vel	PROFILE U N File ************************************	name: 62 ******** Super	1_PR-18C.	wsw ********* Flow Top	******** Height/	******** Base Wt	****	*****	*** th
******** Station	********* Invert Elev	P1 ********	11 MANCHEST repared By: SD LINE 'C	FER" HYDRAU URBAN RES 18C"	WATER S JLICS SOURCE COF ************************************	SURFACE RPORATIO ******** Vel Head	PROFILE U N File	name: 62 ******** Super	1_PR-18C.	wsw ********* Flow Top	*****	******** Base Wt	****	****	*** th
-		P1 ********* Depth	11 MANCHEST repared By: SD LINE ': ************************************	TER" HYDRAU : URBAN RE: 18C' !********	WATER S JLICS SOURCE COF ************************************	SURFACE RPORATIO ******** Vel Head	PROFILE U N File ************************************	name: 62 ******* Super Elev -	1_PR-18C.	wsw ******** Flow Top Width	******** Height/	******** Base Wt	****	*****	*** th >ip
L/Elem *******	Elev Ch Slope *******	P1 ******** Depth (FT)	11 MANCHEST repared By: SD LINE 'C ************************************	TER" HYDRAE : URBAN RES 18C' ********* Q (CFS) - ********	WATER S DLICS SOURCE COR ********** Vel (FPS) -	SURFACE RPORATIO ******* Vel Head SF Ave ******	PROFILE LOWN File File File File File File File File	name: 62 ******** Super Elev SE Dpth ******	PR-18C.	wsw ********* Flow Yop Width Norm Op *******	******** Height/ DiaFT - "N"	******** Base Wt or I.D. - X-Fall	***** ZL ZR *****	****** No Wt Prs/F Type *****	*** th Pip Ch
L/Elem ************************************	Elev Ch Slope ************************************	P1 ******** Depth (FT)	MANCHEST Page 11 MANCHEST Page 12 MANCHEST SD LINE '2' ********** Water Flev ********** 10.400	TER" HYDRAU URDAN RES 18C' ************** Q (CFS)	WATER S JLICS SOURCE COF ************************************	SURFACE RPORATIO ******* Vel Head	PROFILE U. File ******** Energy Grd.El. HF ********	name: 62 ******* Super Elev -	1_PR-18C.	wsw ******** Flow Top Width	******** Height/ DiaFT	******** Base Wt or I.D.	***** ZL ZR *****	***** No Wt Prs/F	*** th >ip
L/Elem ************************************	Elev - Ch Slope ************************************	Pt ******** Depth (FT) - - ********* 1.300	MANCHEST Page 11 MANCHEST Page 12 MANCHEST SD LINE '2' ********** Water Flev ********** 10.400	TER" HYDRAI RES 18C'	WATER SULICS SOURCE COF ******** Vel (FPS) ******** 3.39	SURFACE RPORATIC ******* Vel Head - SF Ave *******	PROFILE L. Prile (************************************	name: 52 ******** Super Elev - - SE Dpth *******	PR-18C.	wsw ********* Flow Yop Width Norm Op *******	******** Height/ DiaFT - "N"	********* Base Wt or I.D	ZL ZR *****	****** No Wt Prs/f Type ***** 0	*** th Pip Ch
L/Elem ************************************	Elev - Ch Slope ************************************	Pt ******** Depth (FT) - - ********* 1.300	12.400	CER" HYDRAI URDAN RES ISC' ********** Q (CFS) - ********* 5.51	WATER S JLICS SOURCE COF ************************************	SURFACE ******** Vel Head SF Ave ******* .18	PROFILE L. File ********* Energy Grd.El. HF ******** 10.58	name: 52 ******** Super Elev - - SE Dpth *******	PR-18C.	wsw ********* Flow Yop Width Norm Op *******	******** Height/ DiaFT - "N"	********* Base Wt or I.D	ZL ZR *****	****** No Wt Prs/F Type *****	*** th Pip Ch
L/Elem ************************************	Elev - Ch Slope ************************************	Pt ******** Depth (FT) - - ********* 1.300	12.400	TER" HYDRAI RES 18C'	WATER SULICS SOURCE COF ********* Vel (FPS)	RPORATIC ******** Vel Head SF Ave ******* .18 - CIVILDES per: 184	PROFILE L. File ********* Energy Grd.El. HF ******** 10.58	name: 52* ******** Super Elev SE Dpth ******** .08	1 PR-18C.	WSW ********* Flow Top Width 	******** Height/ DiaFT - "N"	********* Base Wt or I.D. ' X-Fall ******* .000	ZL ZR ZR	****** No Wt Prs/F Type ***** 0 -	*** Pip Ch ***
L/Elem ************************************	Elev - Ch Slope ************************************	Ph ************************************	12.400	URDAN RESEAUCH PYDRAL URDAN RESEAUCH PYDRAL	WATER SULICS SOURCE COF ********* Vel (FPS) ******* 3.39 - PG W - C PTIAL NUMBER SULICS	SURFACE RPORATIO ******** Vel Head SF Ave ******* .18 CIVILDES SURFACE	PROFILE L	name: 52* ******** Super Elev SE Dpth ******** .08	PR-18C.	WSW ********* Flow Top Width 	******** Height/ DiaFT 'N" ******* 1.500	********* Base Wt or I.D. ' X-Fall ******* .000	ZL ZR ZR	****** No Wt Prs/F Type ***** 0 -	*** Pip Ch ***
L/Elem ************************************	Elev - Ch Slope ************************************	Ph ************************************	12 MANCHEST repared By: SD LINE ' ********* Water Flev	Package Se	WATER SULICS SOURCE COF ********* Vel (FPS) ******* 3.39 - PG W - C PTIAL NUMBER SULICS	SURFACE RPORATIO ******** Vel Head SF Ave ******* .18 CIVILDES SURFACE	PROFILE L. Profile L. Profile L. Profile L.	name: 62* ******** Super Elev - - - - - - - - - - - - -	1 PR-18C.	wsw ********* Flow Top Width 	******** Height/ DiaFT 'N" ******* 1.500	********* Base Wt or I.D. ' X-Fall ******* .000	ZL ZR ZR	****** No Wt Prs/F Type ***** 0 -	*** Pip Ch ***
L/Elem ************************************	Elev 	Property (FT) (FT) (FT) (FT) (FT) (FT) (FT) (FT)	MANCHEST Pepared By: SD LINE 'C' ********* Water Flev ******* 10.400 Program MANCHEST Pepared By: SD LINE '3	CER" HYDRAK URDAN RES Q (CFS) ********* 5.51 W S Package Se ER" HYDRAK URBAN RES 8C' ************	WATER SULICS SOURCE COF ************* Vel (FPS)	SURFACE RPORATIC ******** Vel Head - SF Ave ******* 18 - CIVILDES ber: 184 SURFACE RPORATIC	PROFILE L. PROFILE L. PROFILE L. PROFILE L. PROFILE L. PROFILE L. PROFILE L. PROFILE L. PROFILE L.	name: 62- ******* Super Elev SE Dpth +***** . 08 can 14.06 ISTING	PR-18C.	WSW ***********************************	******* ******* ******* ******* Date: 5-3	Base Wt Dr I.D. X-Fall ************************************	ZL ZR ZR	****** No Wt No Wt Type ***** 0 - PAGE 1: 6:2	*** *** .0
L/Elem ************************************	Elev - Ch Slope ************************************	Ph ************************************	12 MANCHEST Program 13 MANCHEST Pepared By: 14 MANCHEST Pepared By:	Package Se	WATER SULICS SOURCE COF *********** 3.39 ******** 3.39 P G W - (**ial Numb WATER SULICS SOURCE COF *********** VeI (FPS)	SURFACE CIVILDES CROORATIC SF Ave ******* .18 .18 .18 .18 .18 .18	PROFILE L. Profile L. Profile L. Profile L.	name: 62- ******** Super Elev SE Dpth ****** .00 con 14.06 tSTING	PR-18C.	wsw ***********************************	******* ******* ******* ******* Date: 5-3	**************************************	ZL ZR ZR ZR ZR ZR ZR ZR ZR ZR ZR ZR ZR ZR	****** No Wt Prs/F Type ***** 0 -	*** *** .0 1 23
L/Elem ******** 1090.000 A FILE: 62 ********* Station	Elev	Ph ******* Depth (FT) 1.300 SW "31: Pr ******** Depth	12 MANCHEST repared By: SD LINE ' ********* Water Flev	YER" HYDRAI URDAN RES (CFS) ********* 5.51 W S Package Se ER" HYDRAI URBAN RES (8C' *************	WATER SULICS SOURCE COF *********** Vel P G W - C WATER S PLICS SOURCE COF	SURFACE CIVILDES CROORATIC SF Ave ******* .18 .18 .18 .18 .18 .18	PROFILE L. Profile L. Bilenergy Grd.El. HF ********** 10.58 GIGN Versi PROFILE L. NN Filenergy Filenergy	name: 62- ******* Super Elev SE Dpth ******	PR-18C.	WSW Flow Top Width Norm Op ******* 1.82 - WSW ******** Flow Top	******* Height/ DiaFT "N" ******* Date: 5-3	**************************************	ZL ZR ZR ZR ZR ZR ZR ZR ZR ZR ZR ZR ZR ZR	****** No Wt Prs/f	*** th pip Ch *** .0 1 23 ***
L/Elem ******** 1090.000 A FILE: 62 ********* Station	Elev	Ph ******* Depth (FT) 1.300 SW "31: Pr ******** Depth	12 MANCHEST repared By: SD LINE ' ********* Water Flev	CER" HYDRAK Q (CFS) S.51 W S Package Se ER" HYDRAK URBAN RES ESC' W S Q (CFS)	WATER S JLICS SOURCE COF *********** 3.39 P G W - (erial Numb WATER S JLICS SOURCE COF ********** VeI (FPS)	SURFACE RPORATIC Vel Head SF Ave SF Ave ST Ave SURFACE RPORATIC	PROFILE LINE File File File File File File File File	name: 62- ******* Super Elev SE Dpth ******	PR-18C.	WSW Flow Top Width Norm Op ******* 1.82 - WSW ******** Flow Top	******* Height/ DiaFT "N" 1.500 - Date: 5-: ******** Height/ -	##****** Base Wt Dr I.D.	ZL ZR ***** .000 - Time:1	****** No Wt Prs/F Type ***** 0	*** Ch *** .0 1 23

PR Line 'C'

								624_PR	-18C.OUT									
.680	.0010	į I	1	1		.0864	.00	1.03	1.00	1.50	.013	.89	.69	PIPE				
1999.689		1.072	10.083	7.03	5.20	.42	10.50	.00	i 11.03	1.35	1.500	.000	.69	1	. 0			
2.407	.0010		! - · ·	1	- · · ·	.0057	. 01	1.07	.92	1.50	.013	.00	.00	PIPE				
1003.087	9.013	1.122	10.135		4.96	.38	10.52	.09	1.03	1.30	1.500	.000	. 1949	1 1	.0			
4.764	.0010	;- - ;	- -		,	.0052	.02	1.12	.84	1.50	.013	.00	.00	PIPE		00	Line	101
1007.850		1.176	10.194		4,73	.35	10.54	.00	1.03	1.23	1.500	.000	.00	1	.0	712	LINE	C
8.054	.0010	 :	- -	- -		.0047	.04	1.18	:	1.50	.013	.00		PIPE				
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12.983	.0010			[~ -1	.0043	.06	1.24	.68	1.50	.013	.00		PIPE				
1028.887	9,039	1.308	10.347	7,03	4.30	.29	10.63	.00	1.03	1.00	1.500	.008	.00	1	.0			
21.499	 	- - -	, " " i	[- : [[.0840	.09	1.31	.59 I	1.50	.013	' ,ø8	.00	PIPE				
1850.386	9,868	1,398 	10.458	7.03 	4.10	.26	10.72	.80 	1.03	.75	1.500	.000	.00	1 -	.0			
28.710	.6910	ı	; -	1 :	1	.0040	.12	1.40	.48	1.50	.013	.09	.00	PIPE				
1079.096	9. 08 9	1.500 	10.589	7.93	3.98	.25	10.89	' ,60 	1.03	.ee -	1.500	.000	.00	1 1 1-	.e			
10.904 WALL ENT ♠ FILE: 62	.0010 TRANCE				PGW- rial Num	ber: 184	.05 SIGN Versi	1.50 on 14.06	. 00	1.50	.013	.00 31-2 0 19	.00	PIPE PAGE	2			
				TER" HYDRAL	LICS			131110	8		Date. J.	11-2019	IIMCIA	1. 0.2				
			SD LINE '	: DRBAN RES 18C'	OUKEE CO	********			1_PR-18C.	WSW ******	ala ser da ale ser sar ale ser s	*****		****				
Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super	Critical	Flow Top	Height/			No Wt	:h			
-	Ch Slope				1	SF Ave		- SE Dpth	- Froude N			- X-Fall		Type	Ch			
******	*****	*****	******	******	******	*******	*****	******	*****	+****** 	******	******	****	****	***			
1098.60 0 -	9.100	1.538	10.638	7.03	3.98 {-	. 25 	10.88	.69	1.03 	.06	1.500	.000 	.00	e -	.0			
* FILE: 624	4_PR-18C.WS	"311 Pr	1 MANCHES epared By	Package Se TER" HYDRAU ; URBAN RES	rial Num WATER : LICS	ber: 184 SURFACE	PROFILE L	ISTING	9		Date: 5-)	31-2019		PAGE 1: 6:2	1			
*****	**************************************	******	SD LINE ':	*****	*******	******** !	******	*****	PR-18C.	*******	********	********* Dark Lie	****	******	***			
Station -	Invert Elev	Depth (FT)	Water Elev		Vel (FPS)	Vel Head 	Grd.Él.		Depth	Flow Top Width -	DiaFT		ŽI.	No Wt Prs/P				

PR	Line	·B	1
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	lat at	ı	Ŀ	,	1	** ***	l HF		-18C.OUT Froude N	i Norm On	1 "N"	l X-Fall	l ZR	Type	c k
	Ch Slope			 	 ********	\$F Ave	*	*******	********	********	N *******	A=#d11 *******		*****	**
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1000.000	9.010	1.045	12.055	7.28	5.54	.48	10.53	.00	1.04	1.38	1.500	. 888	.00	1	.0
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.698	.0010		•	'		,0066	.98	1.04	1.60	1.50	.013	.00	.00	PIPE	
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1000.698	9.011	1,092	10.103	7.28	5.28	.43	10.54	.00	1.04	1.33	1.500	.000	.00	. 1	.0
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2.484	.0010		,	1		.0059	.01	1.09	,92	1.50	.013	.09	.00	PIPE	
1002 101	9,013	1 144	10.157	7.28	5.04	.39	10.55	. 20	1.04	1.28	1.500	. 969	.08	i	. 0
1003.181		1.144		7.20									-	I- **	
4,915	.0010		,	1		.0053	.03	1.14	.83	1.50	.013	.00	.00	PIPE	
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1008,097	9.018	1.201	10.219	7,28	4.80	.36	12.58	.00	1.04	1.20	1.500	. 000	.00	1	.0
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8.437	.0010					. 0048	. 04	1.20	. 75	1.50	.013	. ଶଖ	.00	PIPE	
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1016.534	9.027	1.265	10.292	7.28	4,58	.33	10.62	.00	1.04	1.09	1.500	-000	.08		.0
13,832	.6010				-		₁	1.27	.67	1.50	.013	 .00	.00	PIPE	
10.002	.0010			ŀ	ı	.0044	1	!	I,	1	.013	1.00	1	1	
1030.366	9.848	1.342	10.382	7.28	4.36	.30	10.68	.00	1.04	,92	1.580	.080	. 89	1	. 8
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25.227	.0010					.0042	.11	1.34	.57	1,50	.013	.86	.00	PIPE	
) {							ļ						!	
1055.593	9.066	1.450	10.516	7.28	4.16	. 27	10.78	.00	1.04	.54	1.500	.000	.00	1	.0
			- "				•	ļ- <u>-</u>		•				-	
13.247	.0010					.0043	.96	1.45	.41	1.50	.013	.00	.00	PIPE	
1068.840	9.879	1.500	10.579	! 7.28	4.12	. 26	10.84	.69	1.04	.00	1.500	.000	.69	1.	.0
1800.046	9.079 													1.	, 0
21.150	.0010	1				. 8046	.10	1.50	.00	1.50	.013	, 99	.00	PIPE	
	TRANCE					100-0						,	,		
♠ FILE: 624		W		W 5	PGW-	CIVILDE	SIGN Versi	on 14.06						PAGE	2
			Program	Package Se	erial Num	ber: 184	11								
							PROFILE L	ISTING	_	Ę)ate: 5-	31-2019	Time:1	1: 6:23	3

"3111 MANCHESTER" HYDRAULICS

Prepared By: URBAN RESOURCE CORPORATION SD LINE '18C' Filename: 624 PR-18C.wsw

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Station	Invert Elev	Depth (FT)	Water Elev	[Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth			Base Wt		No Wth	
_		_ '''													-
	Ch Slope				,	SF Ave			Froude N		"N"	X-Fall		Type Ch	
*********	****	*****	*****	长春添水桑安沙芳茶	水水水水水水	*+***	****	****	*****	****	治症状毒素水汤	****	****	****	e
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1090.000	9.100	1,580	10.680	7.28	4.12	. 26	10.94	.60	1.04	.00	1.500	.000	.00	0 .0	3
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[↑] FILE: 624_PR-18C.WSW

W S P G W - CIVILDESIGN Version 14.06

Program Package Serial Number: 1841 WATER SURFACE PROFILE LISTING

"3111 MANCHESTER" HYDRAULICS
Prepared By: URBAN RESOURCE CORPORATION

Date: 5-31-2019 Time:11: 6:23

PAGE 1

624_PR-18C.OUT SD LINE '18C' Filename: 624_PR-18C.wsw

******	******	*****	******	*******	*******	******	*******	******	*****	******	****	*****	***	*****	K##
ļ	Invert	Depth		Į Q	Vel	Vel	Energy			Flow Top				No Mt	th
Station	Elev	(FT)	Elev	(CFS)	(FPS)	Head	Grd.El.	Elev	Depth	Width	DiaFT	or I.D.	ZL	Prs/F)ip
L/Elem	Ch Slope	l nakonána stána		******	i de skrakende skrakende de	SF Ave	HF	SE Opth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type	
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1000.000	9.010	1.290		11.44	7.07	.78	11.08	-69	1.29	1.04	1.500	.000	.09	<u>.</u> 1	.0
1.356	.0018	-	[-	 -	.0106	.01	1.29	,	1.50	.013	.99	00	PIPE	
ا 1 0 01.356	9.011	1.374		11.44	6.74	.71	11.09	.00	1.29	.83	1.500	.000	.00	1	.₽
7.254	.0010		[<u>- </u>			.8187	.08	1.37	.83	 1.50	.013	.00	- .00	PIPE	
1008.611	9.819	1.500	10.519	11.44	6.47	.65	11.17	.00	1.29	-00	1.500	,000	.00	1	. 0
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WALL ENT	RANCE														
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FILE: 624	_PR-18C.WS	SM:	Program	W S Package Se			IGN Versio	л 14.06					i	PAGE	1

Program Package Serial Number: 1841

WATER SURFACE PROFILE LISTING

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Date: 5-31-2019 Time:11: 6:23

"3111 MANCHESTER" HYDRAULICS
Prepared By: URBAN RESOURCE CORPORATION
SD LINE '18C'

****	******	kakakakakakaka	SD LINE ':	18C'	****		File	паве: 62	4_PR-38C.	W5W					
*********	Invert	Depth	Water	Q	Vel	Vel	Energy	t Somer	teretere [Coitical	Flow Top	********* Woidh+/	*********	****** 	No Wt	kww.
Station	Elev	(FT)	E1ev	(CFS)	(FPS)	Head	Grd.El.			Width				Prs/P	
- 1					[-		ļ				•
L/Elem ********	Ch Slope ******	****	****	*******	 ********	SF Ave	MF ********	SE Doth	Froude N	Norm Dp	"N" ******	X-Fall		Type	
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1000.000	9,010	1.349	10.359		7.73	. 93		.08	1.35	. 90	1.500	.000	.00	1	. a
2,453	.0010			-	l i	.0134	.03	1.35	1.00	1.50	.013	.00	89	PIPE	
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1002,453	9.012	1.464	19.476	12.94		. 84		.00	1.35	.46	1500	. 666	. 00	1	.0
1,998	 - ,0010				I	.0138	 .03	1,46		1.50	 -013			- -	
11773	10040					.0156	.03	1,40	o	1.36	1 1	.00. I I	.00	PIPE I	
1004.452	9.014	1.500	10.514	12.94	7.32	.83	11.35	.00	1.35	.00	1.500	.000	.00	1	.0
85.548	.0010					 0147	1.25				, ,			-	
	RANCE					10147	1.22	1.50	.00	1.50	.013	.00	.00	PIPE	
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1098.006	9.100	2.713	11.813	12.94	7.32	.83	12.65	.00	1.35	. 89	1.500	.000	.00	0	.0
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624 DR-SY15C EDT

ELEMENT NO 4 IS A SYSTEM HEADWORKS

U/S DATA STATION INVERT SECT

1090.000 9.100 1

										624_PR-	-5X15C.	EDT .						
FILE:	624 PŘ	-5X150	C. NSI	Ы		₩SP	G ₩ - E	DIY LIS	TING - Ver:	sion 14	.05			Date:	5-31-2	1019	Time:11	:11: 5
					W	ATER SURF	ACE PROF	ILE - C	HANNEL DEF	INITION	LISTI	NG					PAGE	1
CARD	SECT	CHN	NO	OF AVE						Y(2)			Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
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				W/A	TER SURFACE	PROFILE	- TITLE :	CARD LI	STING									
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112122					Prepared By:	: URBAN R	ESOURCE	CORPORA	TION									
HEADIN	G ETMF	MO 3	TC .			• • • • • • • • • • • • • • • • • • • •												
IICAGIN	U	140 5			SD LINE '180	•			File	name: 6	24 PR-	5X15C.	WSW					
						-	W S	PGW			-						PAGE N	2
				tal-d	ATER SURFACE	PROFTLE			LYSTING									
ELEME	air aira	4 11	e 4 .	SYSTEM OL		*	*	CAND	22512110									
E L EPIG	14 J IVO			U/S DATA	STATION	INVERT	5661					ы	S ELE	đ				
			,	U/S DATA	1006.000		1					-	9.6					
E1 E11E		~ ~.		05561	1000.000	9.010							3.0	ru.				
ELEME	NI NO	2 1:		REACH					31					ADIUS	ANGL	_	ANG PT	MAN H
			1	U/S DATA	STATION	INVERT			N									9
					1098.000	9.100	1		.013					. 000	.000	,	.000	v
STEWE	ON TH	3 F:		WALL EM			*											
				U/S DATA	STATION	INVERT	SECT		FP									
					1090.000	9.100	1		.013									

W S ELEV

9.100

624_PR-5X15C.OUT

W S P G W - CIVILDESIGN Version 14.86 * FILE: 624_PR-5X15C.WSW

Program Package Serial Number: 1841 WATER SURFACE PROFILE LISTING

"3111 MANCHESTER" HYDRAULICS

Prepared By: URBAN RESOURCE CORPORATION

Filename: 624_PR-5X15C.wsw SD LINE '18C'

	******	******	****	****	*****	*****	******	*****	******	*****	****	******	*****	*****	- * *
Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev		Flow Top Width			ZL	No Wit Prs/F	
L/Elem ********	- Ch Slope *******	- " ********	*****	******	*****	 SF Ave ******	- HF ******	SE Dpth ******	Froude N	Norm Dp *******	"N" ******	X-Fall	ZR *****	Type ****	Ch ***
1800.000	9.010	.404	9.414	{ 7,28 	3.61 	, 28	9.62	.00 	.49	5.0 0	1.500	5.000	.00 -	e 1-	.0
- (.49 0	.0010			: : 1	1	.8038	.00	.49	1.00	.63	.013	,00	.08	BOX	
1000.490	9.016	.424	9,434	7.28	3.44 	.18	9.62	.00	.40	5.00	1.500	5.000	.08	, -	.0
1.768	.0010] [1		:)	1	.0033	.91	.42	.93 I	.63	.013	.66	.00	°BOX	
1002.258	9.012	.444][9.457	7.28	3.28	.17	9.62	.00 	.40 	5,00	1.500	5.000	.00	`∂ -	.0
3.607	.0010	1 - 1		:	 	. 2028	.01	.44 I	.87	.63	.013	.06 !	.00	BOX	
1005,865	9.016	.466	9.482	7.28	3.12		9.63	'.00 	' .40 	5.00	1.500	5.000	.88	' 8 -	.8
6.311	.0010			: . : .	•	.0024	' - 0 2	.47	.81	.63	.013	.00	.88	BOX	
1012.176	9.022	.489 	9.511	7.28 -	2,98	.14	9.65	.00	.40	5.00	1.500	5.000	.00 -	0	.0
10.430	.0010			: - 1		.0021	.02	.49	.75 1	.63	.013	.00	.00	BOX	
1022.696	9.033	.513 	9.545	7.28	2.84	.13	9.67	,00	.49 	5.00 	1.580	5.000	.86	์ a ∣	.0
17.064	.0010	1 I		: - · · · · · · · · · · · · · · · · · ·	1	.0018	.03	.51	.70	.63	.013	.00	.00	вох	
1039.671	9.050	.538 " -	9.587	7.28	2.71	.11	9.70 	.0-8	.40 	5.00	1.500	5.000	.00	ј-	. B
28.792	.0010			·	,	.0016	.94	-54	65	.63	.013	.00	.08	вох	
1068,463 -	9.078	.564 	9.642	7.28	2.58	.10	9.75	.99	.4 0	5.00	1.500	5.000	.00	- -	.0
21.537 WALL ENT	.0010	. •			•	.0014	.83	.56	.61	.63	.013	.90	.00	BOX	
♣ FILE: 624	4_PR-5X15C	.WSW	Program	W S Package Se			SIGN Versi 11	on 14.06						PAGE	2
		*311	1 MANCHEST	rer" hydrau		SURFACE	PROFILE L	ESTING	a	ſ	Date: 5-3	31-2019	Time:1	1:11:	7
		Pr	epared By: SD LINE ':	: URBAN RES 18C'	SOURCE CO	RPORATIO		mame: 62 4	4_PR-\$X150	.wsw					
**********	Invert	Depth	********** Water	·***********	******** Vel	******** Vel	Energy			Flow Top				No Wi	th
Station -	Elev	(FT) 	Elev	(CFS) - "	(FPS) -	Head -	Grd.El.	Elev	Depth	Width 	DiaFT	or I.D.	ZL 	Prs/P	'1p

PAGE 1

Date: 5-31-2019 Time:11:11: 7

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SF Ave HF SE Dpth Froude N Norm Dp N" X-Fall ZR Type Ch L/Elem | Ch 5lope |

624_PR-SX15C.OUT

***	*****	*****	*******	*****	*****	*****	********	****	*****	***	*****	中水浴状液水水	***	****	**
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	i		- 1			E .		,	: :			1 6	1	E .	
1000 000	0.100	1270	0 (30	7 20	4 64	3.0	0.70	- 00	40	E 00	4 500	E 000	20		_
1090.000	9.100	.578	9.678	7.28	4.24	.10	9.78	.00	.40	5.00	1.500	5.000	.00	· · ·	_ to
+ -			1	!	1	!-	[اء دا	I – - i	1 -	I -	

♠ FILE: 624_PR-5X15C.WSW

W S P G W - CIVILDESIGN Version 14.06

Program Package Serial Number: 1841 WATER SURFACE PROFILE LISTING Date: 5-31-2019 Time:11:11: 7

PAGE 1

"3111 MANCHESTER" HYDRAULICS

Prepared By: URBAN RESOURCE CORPORATION

SD LINE '18C' Filename: 624 PR-5X15C.wsw

*******	**#******	******	\$9 LINE	18L *********	*****	*****	9111 *******	name: 6∠ *******	4_PK-5X15 ********	iW5W ********	****	****	*****	****	***
Station	Invert Elev	Depth (FT)	Water Elev	Q (CF\$)	Vel (FPS)	Vel Head	Energy Grd.El.		Critical Depth	Flow Top		Base Wt		No W	
-	Ch Slope	:		-	: ` .				: .	ļ	:	X-Fall	ļ- ·	Type	•
*******	******	*****	*******	*******	******	*****	*****	*****	*****	*****	*****	*****	*****	****	***
1000.000		.452	9.462	8.63	3.82 	.23	9.69		.45 !	5.00	1.500	5.000	. 00	. 8	.0
.559	.0010	i] - [! - !	1	.0037	.00	45 I		.71	 .013	.09 .09	.00	80X	
1000.559	9.011	.474	9.485	8.63 	3.64 	.21	9.69	.90 	.45	5.00	1.500	5.000 	. 0 0	' @ 1-	.0
2.020				· ·	·	.0032	.01	.47	.93	.71	.913	.00	.00	вох	
1002.579	9.013	.498]	9.510	8.63		.19	9.70	, ea 	.45	5.00 -	1.500	5.000	.09	1 B !_	.0
4.123	.0010 	!!!	·	! 	j	.9928	.01	.50	.87	.71	.013	.00	.00	BOX	
1006.703	9.017 	.522	9.539	8.63	3.31	. 17	9.71	.00	.45	5.00	1.500	5.000	.99	1	.0
7.218	- 0010 			} - :	!- -: !	.0024	.82	.52	,81 ,81	 -71	. 01 3	.09	.00	BOX	
1013.921	9.024 -	.547 [°] 	9.571	8.63	3.15	.15	9.73	.00	.45	5.00	1.569	5.000	.80	1	.0
11.937	.0010	1		: 1	" 	.0021	.02	.55	.75	.71	.013	.00	.00	BOX	
1025.858	9.036	.574	9,610	8.63	3. 81	.14	9.75	.00	.45	5,00	1.500	5.000	.80	่อ	.0
19.558	.0010	₁	 	. :	,	.0018	. 03	.57	.70	.71	 .013	.00	.00	BOX	
1045.416	9.855	, 602	9.657	8.63	2.87	.13	9.79	.00	.45	5.00	1.500	5.000	.00	'е	.0
33.091	.0010	!			1		 05	.60	.65	.71	.013	.99	.00	BOX	
1078.507	9.089 - -	.631	9.728	8.63	2.73	.12 -	9.84 	.98	.45	5.00	1.500	5.000	.00	0	.0
11.493	.0010 - 10010 - 10010	1	- "	- "!		.0014	.02	.63	.61	.71	.013	.00	.00	BOX	
♠ FILE: 624		WSW	Pongonam	W 5			IGN Versio	on 14.06						PAGE	2

Program Package Serial Number: 1841

WATER SURFACE PROFILE LISTING Date: 5-31-2019 Time:11:11: 7 Ø

"B111 MANCHESTER" HYDRAULICS

Prepared By: URBAN RESOURCE CORPORATION

SD LINE '18C'

Filename: 624_PR-5X15C.wsw

624	PR.	·5X35C.	.OUT

水水水水水水水水水	******	*****	******	*****	未本水水水水水水	****	*****	*****	*****	******	****	*****	***	***
	Invert	Depth	Water	ΙQ	Ve.l	Vel	Energy	Super	Critical	Flow Top	Height/	Base Wt		No Wth
Station	Elev	(FT)	Elev	(CF5)	(FPS)	Head	Grd.El.	Elev	Depth	Width	DiaFT	or I.D.	ZL	Prs/Pip
-		-]					-	
L/Elem	Ch Slope	Ì	İ	İ		SF Ave			Froude N		"N"	X-Fall	ZR	Type Ch
****	*****	******	******	*****	****	******	******	*****	*****	*****	****	水水水水水水水	****	*****
		İ	į			•	į	ĺ	1			Ι.,	ļ	1
1090.000	9.108	.640	9.740	8.63	2.70	.11	9.85	.00	.45	5.00	1.500	5.800	. 00	6 .0
-]					i	i	-			[-	-

* FILE: 624_PR-5X15C.WSW

W 5 P G W - CIVILDESIGN Version 14.06

PAGE 1

Program Package Serial Number: 1841

WATER SURFACE PROFILE LISTING

Date: 5-31-2019 Time:11:11: 7

"3111 MANCHESTER" HYDRAULICS

Prepared By: URBAN RESOURCE CORPORATION SO LINE '18C'

Filename: 624_PR-5X15C.wsw

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******	6********	******	*********	 ********	*****	*****	*****	*****	*******	********	*****	*****	****	****	***
Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.		Critical Depth	Width	Height/ DiaFT	1	ZL	No W Prs/	
L/Elem *******	l	 *******	··	*****	•	SF Ave	- }!F *******	SE Dpth *****	- Froude N ******	F	*******	X-Fall	ZR *****	Type ****	
1000.000	9.010	 - 	9,556	11.44 - -	4.19	. 27 	9.83 -	 ,00 	.55 -	5.00 -	1.500	5.000 	.00	 0 -	.0
.688	.0010	, - i		[- 1	. 0037	.08	.55	1.00	.8S	.013	.0 0	.00	BOX	
1000.688	9,011	.572	9.583	11.44	4.00	.25	9.83	.00	.55	5.08	1.506	5.000	.00	1 19	.0
2,497	.0010	- -			1-	 .0032	.01	.57	.93	.85	.013	.00	.00	BOX	
1003,185	9.013	.698	9.514	11.44	3.81	.23	9.84	.00	.55	5.60	1,500	5.000	.00	. 0	.0
5.098	.0010					.0027	.91	.68	.87	i . 85	.013	.00	.96	BOX	
1008.284	9.018	.630	9.648	11.44	3.63	.21	9,85	.00	. 55	5.00	1.500	5.000	.00	0	.e
- 8.923	.0010			- -	-	 0024	.82	-63	. 81	.85	.613	.89	.80	BOX	
1017.206	9.827	.550	9.688	11-44	3.46	.19	9.87	.00	.55	5.00	1.500	5.000	.00	0	.ø
- 14.754	.0010				-	. 0020	.03	.65	75	.85	.013	.00	.00	BOX	
1031.960	9.842	.693	9.735	11.44	3.30	.17	9.90	.08	.55	[5.00	1.500	5.000	.00	9	.0
24.176	.0010		-		-	.0018	.04	 .69	.70	.85	.013	.00	.00	- BOX	
1056.136	9.066	.726	9,793	11.44	3.15	. 1 5	9.95	 00.	. 55	5.00	1.500	5.99 3	. 00	9	.0
~ 33.864	.0010] ·· -	· -	[-	.0015	.05] .73	 -65	 .85	 .013	 .00	.80	BOX	
WALL ENT		i i		1		l		1						ı	
1090.000	9.100	,758 	9.858	11.44	3.02	.14	10.00	.00 	.55	5,00	1.500	5.999	. 9 0	' Ø }-	.0
				,	•									-	

PR Line Froms)

↑ FILE: 624_PR-5X15C.WSW

W S P G W - CIVILDESIGN Version 14.06

PAGE 1

624 PR-5X15C.OUT

Program Package Serial Number: 1841

WATER SURFACE PROFILE LISTING

"3111 MANCHESTER" HYDRAULICS

Prepared By: URBAN RESOURCE CORPORATION SD LINE '18C' Filename: 624_PR-5X15C.wsw

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***********	i Invert	Depth	Water	Q	Vel	Vel	Energy	Super	Critical	Flow Top	Height/	Base Wt]	No W	hth
Station	Elev	(FT)	Elev	(CFS)	(FPS)	Head	Grd.El.					or J.D.		Prs/	Pip
-					1				11		- "N"	V Call		·	, <i>e</i> h
L/Elem	Ch Slope	******	*****	******	********	SF Ave	∤ {F ********	\$ t Uptn	Froude N	*******	N ******	X-Fall	ZR *****	Type ****	***
	1				,	i			ĺ			i i	i	1	
1000.000	9.010		9.502	12.94	4.37	.38	9.90	.00	.59	5.00	1.500	5.000	08	. 8	.0
	•	-		[- -	[-								.ee	BOX	
.750	.0010	1	1	l I	i	.0036	.00	.59	1.00	.93	.013	.00	מוא.	BOX	
1000.750	9.011	.621	9.632	12.94	4.17	.27	9,98	, 68	.59	5.00	1.500	5.000	.00	່ ຍ	.0
														-	
2.729	,0010					.0031	.01	.62	.93	.93	.013	.99	.00	BOX	
1003.479	(9.013	,652	9.665	12.94	3.97	. 24	9.91	.69	.59	5.00	1.500	5.000	.00	9	.0
1003.479										_				1-	. •
5.571	,0018	•	•			.0027	.02	.65	.87	.93	.013	.99	.00	BOX	
		1]	F 505	.00	i A	
1009.049			9.703	12.94 	3.79 -	.22 	9.93	.00	.59 	5.00	1.5 0 0 	5.000		l.	.₽
9,745]"	1"	ļ I	r t.	.0023	.02	.68	.81	.93	-013	.00	.08	BOX	
		1 :				1			ľ		l	i I			
1018.794	9.029		9.746	12.94	3.61	.20	9.95	.00	.59	5,00	1.500	5.000	.00	, 0	.0
16,103				[<u>-</u> [₋		.03	.72	.75	.93	 .013	.99	.89	BOX	
10, 100	.0010	1	l			10020	.03	./2	1 .,,				1		
1034.897	9.045	.752	9,797	12.94	3.44	.18	9.98	.00	.59	5.69	1.500	5.000	.89	0	.0
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26.360	.0010	ı I	ł	1 1		.0018	. 05	.75	.70 I	.93 I	.013	.00	. 00	BOX	
1061.257	9,871	.788	9.860	12.94	3.28	.17	10.03	.88	, 59	5.00	1.500	5.000	.00	่อ	.0
-						- 1-) <u> </u>		1				1-	
28.743	.0010					.0016	.04	. 79	.65	, 93	.013	.09	. 96	BOX	
WALL EN	I RANCE	í	t i			1		1	l	1	1	1		ı	
1090.000	9.100	.816	9.916	12.94	3.17	.16	10.07	.00	. 59	5.00	1.500	5.000	.00	์ ฮ	.0
-					[-								-	-	
•		13011			000	TUT LORG	TEM Vonci	nn 14 06						PAGE	4
◆ F.L.L.E.: 624	4 PR-5X15C	, N⊃W		W S	F G W - 1	・エムエドかにつ	IGN Version	311 TA*AQ						LHOE	.1.

♣ FILE: 624_PR-5X15C.WSW

Program Package Serial Number: 1841

WATER SURFACE PROFILE LISTING

"3111 MANCHESTER" HYDRAULICS

Prepared By: URBAN RESOURCE CORPORATION SD LINE '18C'

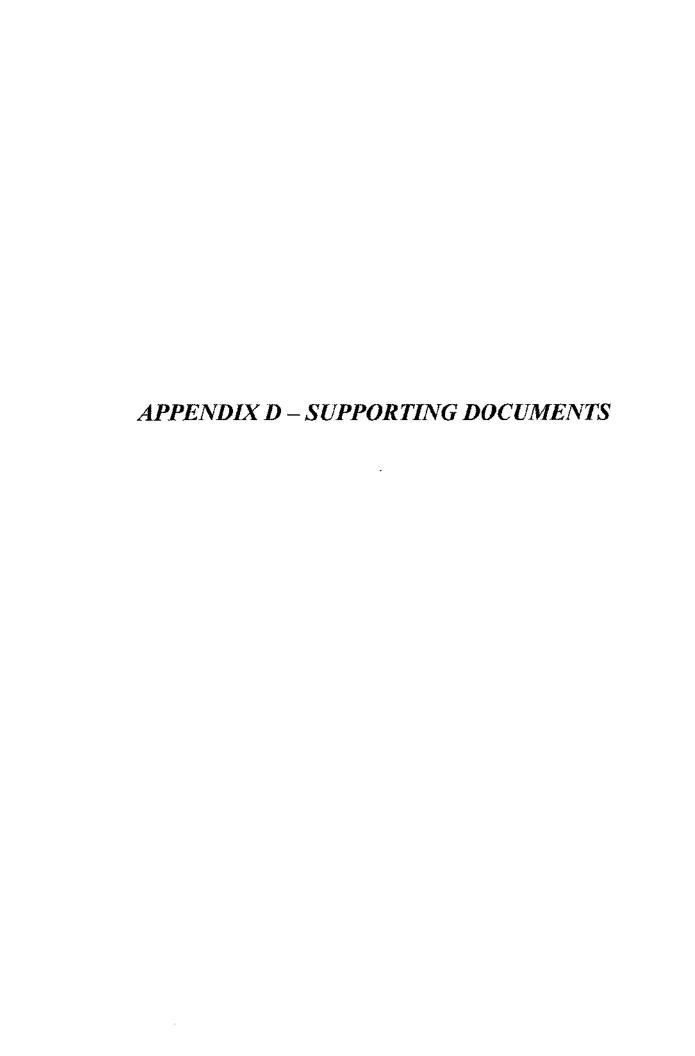
نان نام جاه بای نام چاپ ش بای در داند جاه			SD LINE ':			****	File		4_PR-5X15		****		****	*****
*****	Invert	Depth	Water	Q	Vel	Vel	Energy		Critical			. , , ,		No Wth
Station	Elev [(FT)	Flev	(CFS)	(FPS)	Head	Grd.£1.	Elev	Depth	Width	DiaFT	i	ZL	Prs/Pip
1/Elem	Ch Slope					SF Ave	- HF ******		Froude N		"N"	x-Fall		Type Ch

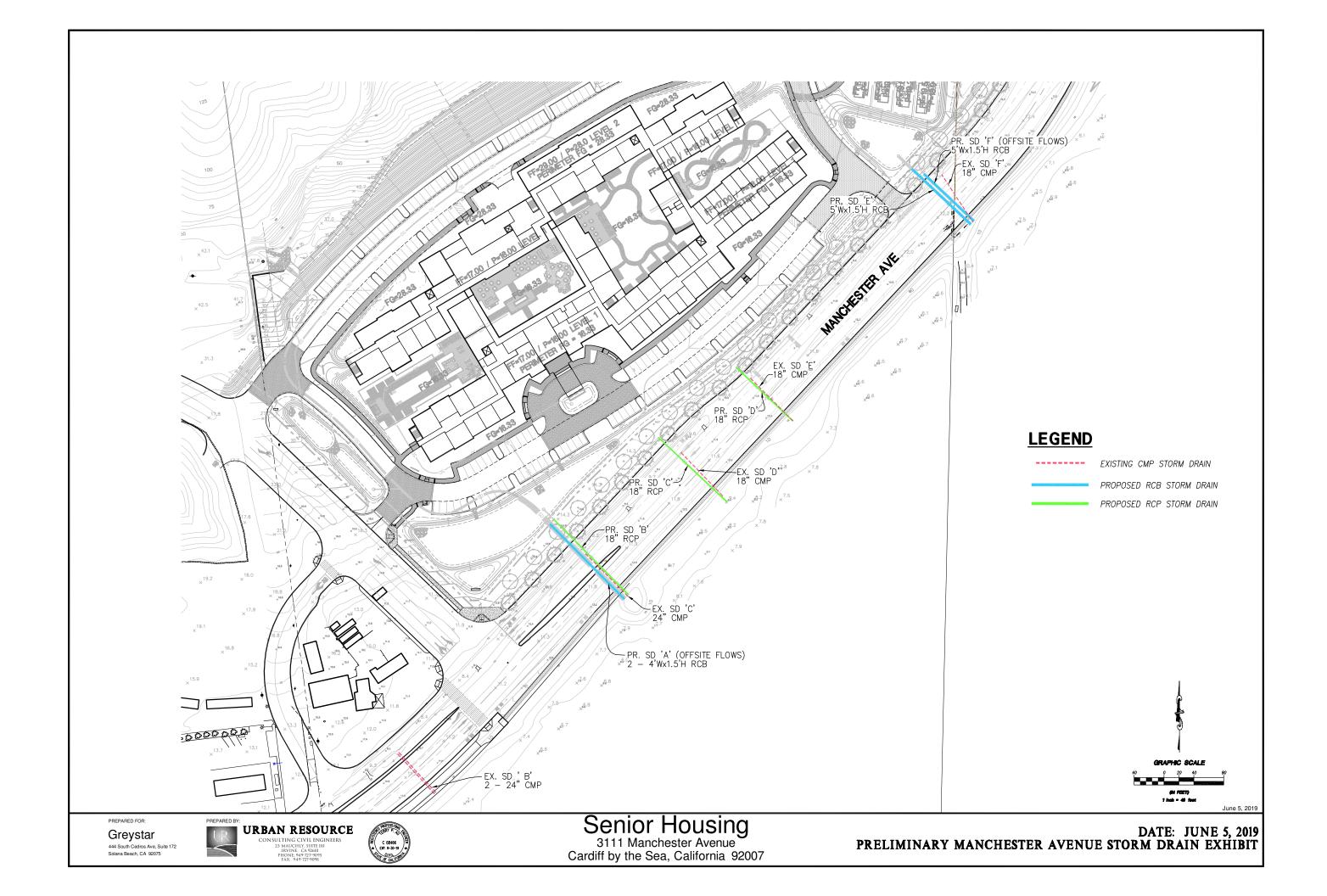
PR Line E'

Date: 5-31-2019 Time:11:11: 7

Date: 5-31-2019 Time:11:11: 7

							1	624_PR-5X	15C.OUT						
1		ı	1				ŀ								
1000.000	9.010	.994	9.914	24.38	5.48	-45	10.37	-99	.90	5.00	1.500	5.000	.00	, ø	.0
~ -	,	- -	- [-	- -	-]-	- -	-1-		* 00					POY	
1.162	.0010					.0836	.00	.90	1.00	1.43	.013	. 00.	. 89	BOX	
		2.50	2 2 2 2	24.20		47	10.37	.00	.98	5.00	1.500	5,000	. 00	i a	.0
1001.162	9.011	.948	9.959	24.38	5.14 - -	.41 - -	-]-		.90					1.	
4,200	.0010	- -	-1-	- : -	" -	.0031	.01	.95	.93	1.43	.013	.00	. 00	BOX	
4.200	*00*50	1	1			1000.34	1	.,,		1				1	
1005.362	9.015	.994	18.009	24.38	4.91	.37	10.38	.00	.90	5.00	1.500	5.000	.00	. 6	.0
-1.		- -	- -		- -	- -	-1-	-	-				-	-	
8.512	.0010	•	·		•	.0025	.02	. 99	.87	1.43	.013	.00	. 99	BOX	
	1	1					!	1							
1013.874	9.024	1.643	10.066	24.38	4.68	.34	10.41	.00	. 9მ	5.00	1.500	5.000	. 00	. 6	.0
-1-	- -	-[-	- -	- -	- -	- -	-1-			•	-	• /		j -	
14.762	.0010					.0022	.03	1.04	.81	1.43	.913	, 99.	.00	BOX	
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1028.635	9.039	1.093	10.132	24.38	4.46	.31	18.44	,60 -	.90	5.00	1.500	5.000	.00	رم ۱-	.0
-[-		- -	- -	- -	- [-	.0019	- - .05	1.09	- 75،	1.43	.013	 80,	.00	BOX	
24.124	,9 9 10	ı	4	ı		.0013	.63	1.09	./3	#. 4 5	.6.23		-00	I	
1052.759	0.063	1.147	10.210	24.38	4.25	.28	10.49	.00 '	.98	5.00	1.500	5.000	.00	' e	.0
- -		- -	-1-	- -	-1-	-1-	-/-		- !					٠-	
37.241	.0010	•	•	•	•	.9017	. 06	1.15	.70	1.43	.013	.00	.00	BOX	
WALL ENTE	RANCE														
1	1	1	1			1		1							
1090.000	9.100	1.202	10.302	24.38	4.06	. 26	10.56	.00	.90	5.99	1.500	5.000	.00	0	.0
- -	-1-	-1-	-1-	- -	- -	- -	- -	- -	-			1	-	-	





ENCINITAS SENIOR APARTMENTS PRELIMINARY STORMWATER STORAGE ANALYSIS

 $V=C*P_6*A$

P₆ (100 yr, in.) 2.5 Total Area (ac.) 9.9

Existing Condition

Land Use	С	A (ac.)	Vex (cf)
Fallow Bare Soil	0.2	9.9	17.969
Oak Aspen Mtn	0.2	3.9	17,969

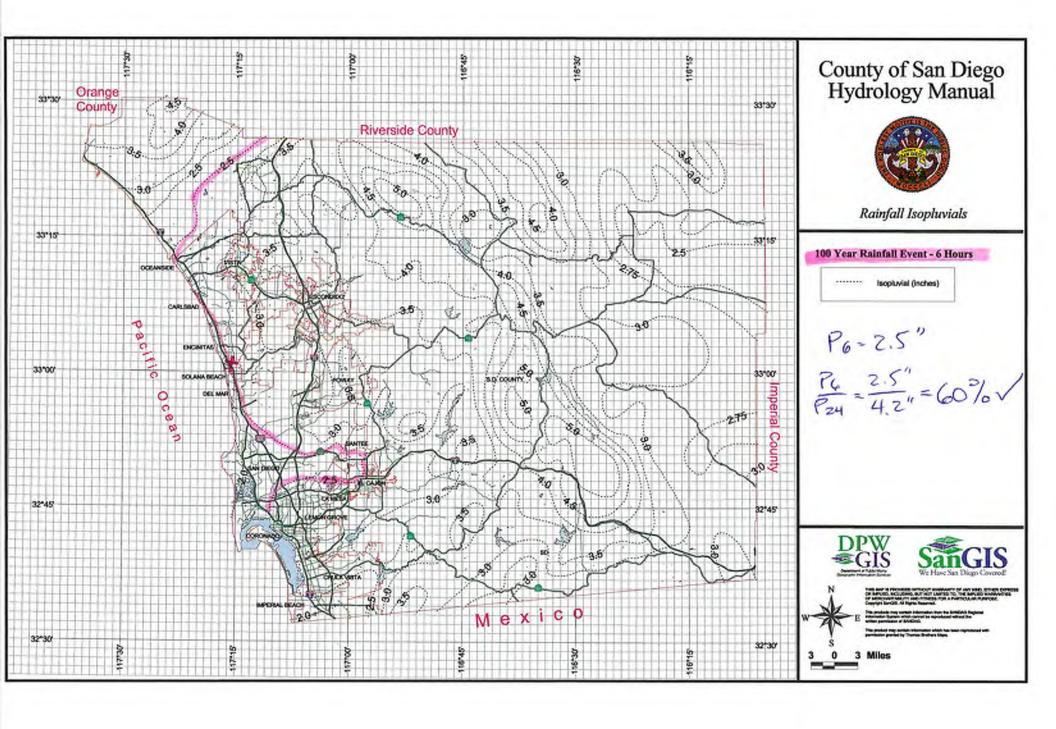
				(sf)	(sf)	(cf)	(cf)	
Proposed Condition				Basin Bot	Basin	Volume	18"Gravel	Vpr
Land Use	С	A (ac.)	Subarea	Area	at 15" Pond	at 15" Pond	Storage	(cf)
7.3du/ac	0.48	0.4						1,742
7.3du/ac	0.48	0.5	Cubaraa C	2.445	2 022	4 2 4 1	2.200	2,178
7.3du/ac	0.48	0.93	Subarea C	2,445	3,933	4,241	2,360	4,051
street/hard.	0.9	0.37						3,022
Urban Newly Graded	0.2	0.47						853
street/hard.	0.9	0.11						898
street/hard.	0.9	1.25	Subarea D	4,230	5,406	6,408	3,244	10,209
7.3du/ac	0.48	1.56						6,795
7.3du/ac	0.48	0.47						2,047
7.3du/ac	0.48	0.49						2,134
7.3du/ac	0.48	0.27	Cubaraa F	11 200	12 572	16 540	0.142	1,176
7.3du/ac	0.48	2.06	Subarea E	11,300	13,572	16,540	8,143	8,973
street/hard.	0.9	1.02						8,331
	Total:	9.9			Total:	27,189	13,747	52,412

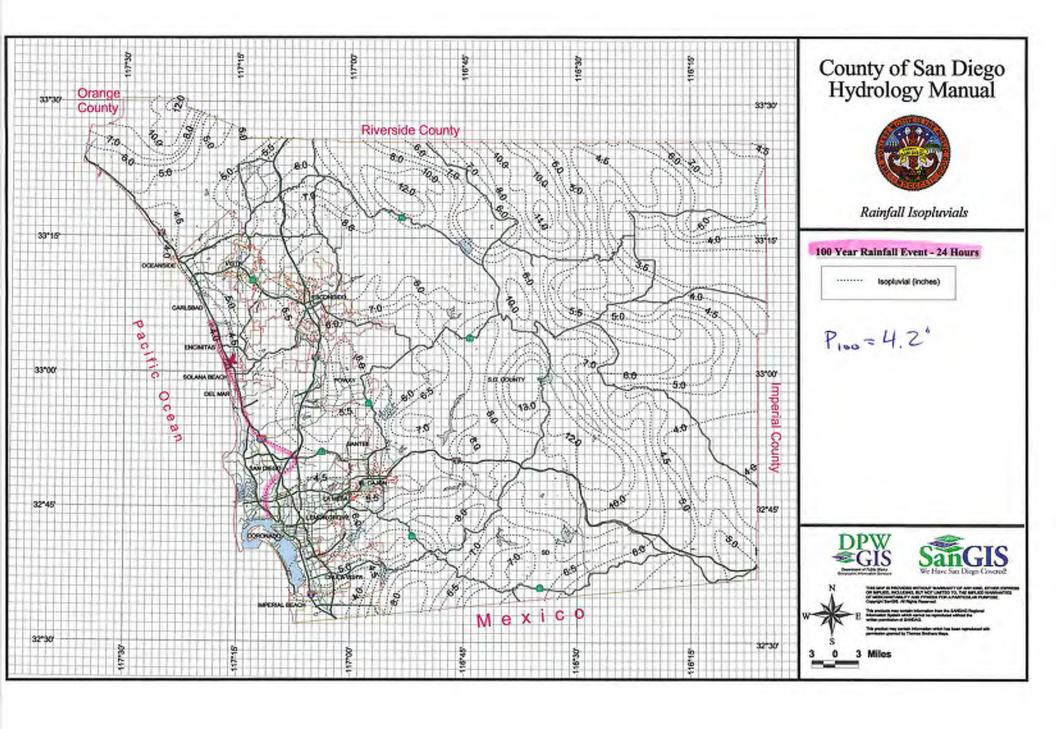
Total
Storage (cf)= 40,936 > (Vex-Vpr) OK

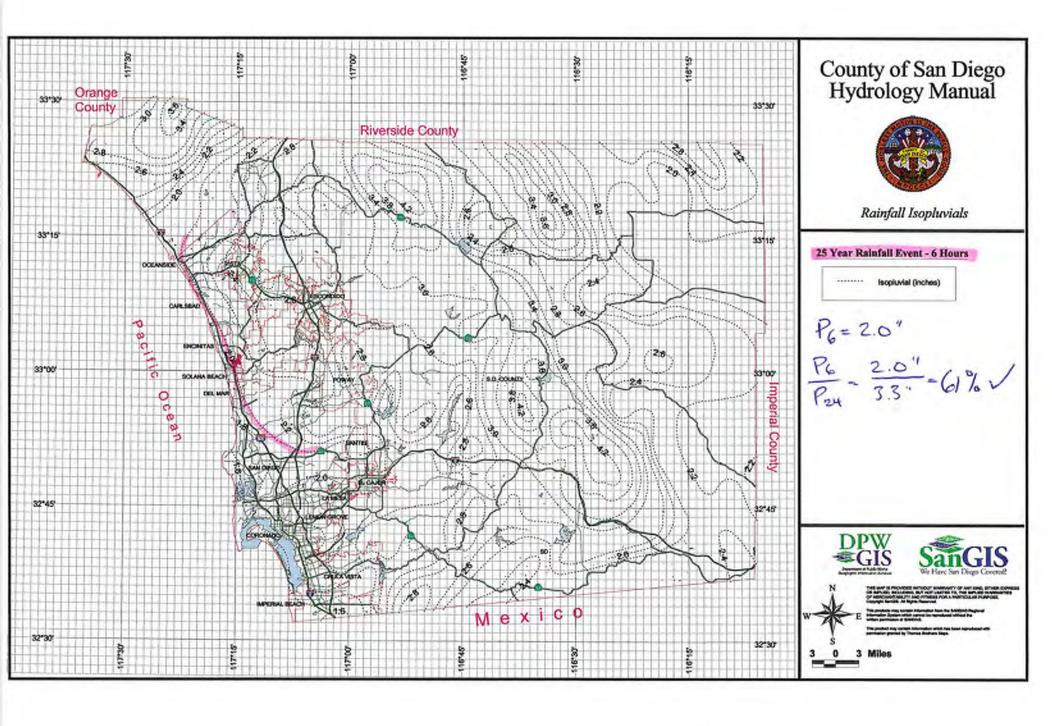
*See page 3-6 of SD Hydrology Manual for C values

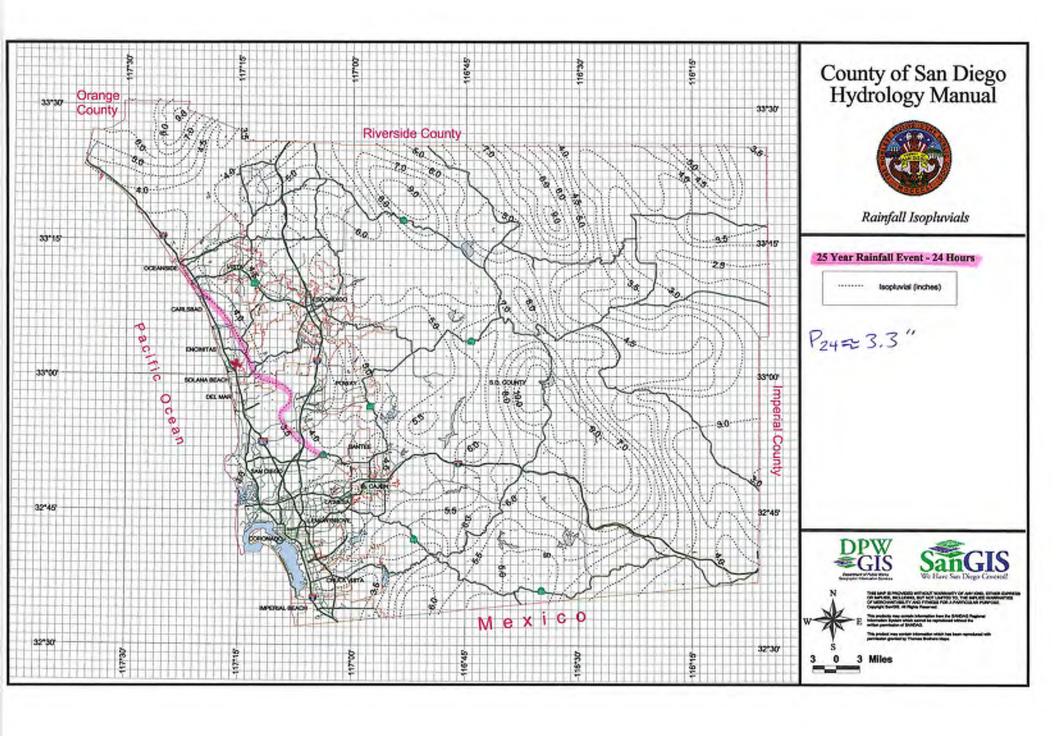
Vex-Vpr

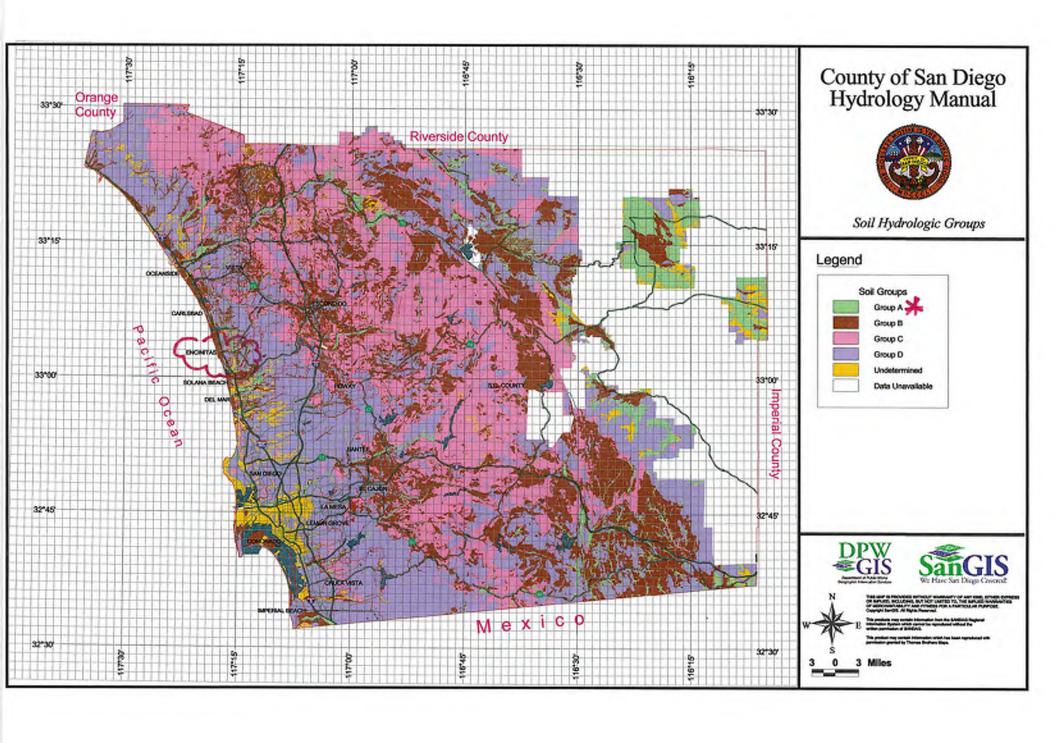
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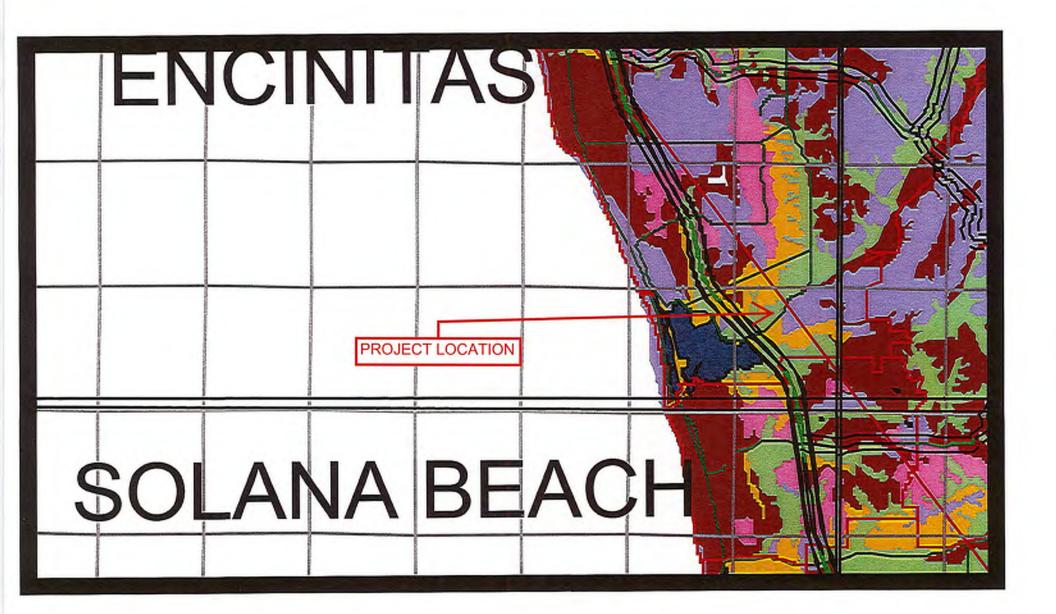














MAP LEGEND MAP INFORMATION The soil surveys that comprise your AOI were mapped at Area of Interest (AOI) C 1:24,000. Area of Interest (AOI) C/D Soils Warning: Soil Map may not be valid at this scale. D Soil Rating Polygons Enlargement of maps beyond the scale of mapping can cause Not rated or not available A misunderstanding of the detail of mapping and accuracy of soil Water Features line placement. The maps do not show the small areas of A/D Streams and Canals contrasting soils that could have been shown at a more detailed B scale. Transportation B/D Rails Please rely on the bar scale on each map sheet for map C measurements. Interstate Highways C/D Source of Map: Natural Resources Conservation Service **US Routes** Web Soil Survey URL: D Major Roads Coordinate System: Web Mercator (EPSG:3857) Not rated or not available Local Roads Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts Soil Rating Lines Background distance and area. A projection that preserves area, such as the Aerial Photography Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required. This product is generated from the USDA-NRCS certified data as of the version date(s) listed below. B/D Soil Survey Area: San Diego County Area, California Survey Area Data: Version 12, Sep 13, 2017 C/D Soil map units are labeled (as space allows) for map scales 1:50,000 or larger. Not rated or not available Date(s) aerial images were photographed: Nov 3, 2014—Nov 22, 2014 Soil Rating Points The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background AVD imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident. B/D

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
CsC	Corralitos loamy sand, 5 to 9 percent slopes	A 	13.1	100.0%
Totals for Area of Intere	st	1	13.1	100.0%

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Aggregation is the process by which a set of component attribute values is reduced to a single value that represents the map unit as a whole.

A map unit is typically composed of one or more "components". A component is either some type of soil or some nonsoil entity, e.g., rock outcrop. For the attribute being aggregated, the first step of the aggregation process is to derive one attribute value for each of a map unit's components. From this set of component attributes, the next step of the aggregation process derives a single value that represents the map unit as a whole. Once a single value for each map unit is derived, a thematic map for soil map units can be rendered. Aggregation must be done because, on any soil map, map units are delineated but components are not.

For each of a map unit's components, a corresponding percent composition is recorded. A percent composition of 60 indicates that the corresponding component typically makes up approximately 60% of the map unit. Percent composition is a critical factor in some, but not all, aggregation methods.

The aggregation method "Dominant Condition" first groups like attribute values for the components in a map unit. For each group, percent composition is set to the sum of the percent composition of all components participating in that group. These groups now represent "conditions" rather than components. The attribute value associated with the group with the highest cumulative percent composition is returned. If more than one group shares the highest cumulative percent composition, the corresponding "tie-break" rule determines which value should be returned. The "tie-break" rule indicates whether the lower or higher group value should be returned in the case of a percent composition tie. The result returned by this aggregation method represents the dominant condition throughout the map unit only when no tie has occurred.

Component Percent Cutoff: None Specified

Components whose percent composition is below the cutoff value will not be considered. If no cutoff value is specified, all components in the database will be considered. The data for some contrasting soils of minor extent may not be in the database, and therefore are not considered.

Tie-break Rule: Higher

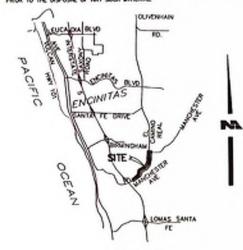
The tie-break rule indicates which value should be selected from a set of multiple candidate values, or which value should be selected in the event of a percent composition tie.

GRADING NOTES:

- ALL WORK SHALL BE DONE IN ACCORDANCE WITH THESE PLANS, THE STANDARD SPECIFICATIONS FOR PLBLIC WORKS CONSTRUCTION, THE DESIGN CONSTRUCTION STANDARDS OF THE CITY OF ENCHATAS. THE SPECIAL PROVISIONS FOR THIS PROJECT, AND THE SAN DEED AREA REGIONAL STANDARD DRAWNOS, ANY CHANGES OR REVISIONS THERETROM SHALL BE APPROVED BY THE CITY ENGINEER PRIOR TO ANY REQUEST FOR INSPECTION.
- CONTRACTOR SHALL TAKE ANY NECESSARY PRECAUTIONS REQUIRED TO PROTECT ADMICENT PROPERTIES QUEING GRADING OFFICIALS. ANYTHING DIMAGED OR DESTROYED SHALL BE REPLACED OR REPARED TO CONDITION EXISTING PRIOR TO GRADING.
- 3. THE CONTRACTOR SHALL BE RESPONSIBLE THAT ANY WOMANINT OR BENCHMARK WHICH IS DESURED OR DESTROYED SHALL BE RESTAULISHED AND REPLACED BY A MICHIGAN BY A MICHIGAN BY A MICHIGAN BY A MICHIGAN BY A MICHIGAN BY A MICHIGAN BY A MICHIGAN BY AND SHALLOW.
- THE CONTRACTOR SHALL DESIGN, CONSTRUCT AND MANTAIN ALL SAFETY DEVICES, INCLUDING SHORMA, AND SHALL BE RESPONSIBLE FOR CONFORMING TO ALL LOCAL, STATE AND FEDERAL SAFETY AND HEALTH STANDARDS, LAWS AND REQUIREDORS.
- GRADNO AND EQUIPMENT OPERATING WITHIN CHE-HALF (1/2) MILE OF A STRUCTURE FOR HUMAN GOOLPANCY SHALL NOT BE COMPUTED BETWEEN THE HOURS OF \$130 P.M. AND 7:30 A.M. HOR ON SATURDAYS, SUIDAYS AND CITY RECOGNIZED HOLIDAYS.
- 8. PROR TO HAMAING DRT OR CONSTRUCTION MATERIALS TO MAY PROPOSED CONSTRUCTION SITE WITHIN THIS PROJECT THE CONSIDERATION SITE WITHIN THIS PROJECT THE CONSIDERS SHALL SHOW! TO MAN DESCRIPE APPROVAL FROM THE CITY DIGITAL FOR THE PROPOSED HAM, ROUTE. THE GEVELOFER SHALL COMPLY WITH ALL CONCIDENCES AND REQUIREMENTS THE CITY DIGITALES THE
- CITY ENGNEER MAY IMPOSE WITH REGARDS TO THE HALLING OPEN ALL GRADNO SHALL BE OBSERVED AND ESTED BY A QUALIFIED SOUS ENGNEER OR HOPE THERE OBSECTION. THEY SHALL CONSERVE AND TEST THE EXCANATION FLACEMENT AND COMPACTION OF FLEX AND BADDRILS AND COMPACTION OF THENDES. THEY SHALL SHAND SALPTILS AND COMPACTION OF THENDES. THEY SHALL SHAND SHALL SHOPE OF THE SALPTILS AND COMPACTION OF THE SALPTILS AND COMPACTION OF THE SALPTILS AND COMPACTION OF THE SALPTILS AND TESTS WERE MADE BY THEM OR HODGE THEY SHALL SHAND THE SALPTILS WERE CONSTRUCTED IN ACCORDANCE MISH THE APPROVED GRADNE HAS AND THAT ALL EMPANAMENTS AND ESCANATIONS ARE ACCORDINAL FOR THER RYSTONED USE.
- DECONTRACTOR SHALL PROPERLY GRADE ALL DECAVATED SHERACES TO PROVIDE POSITIVE ERAMAGE AND PREVENT PONDING OF WATER. THEY SHALL CONTROL SHERACE WATER AND AVOID DIAMAGE TO ADJOINED PROPERTIES OR TO FINS-ED MORE ON THE SITE AND SHALL TAKE REMEDIAL MEASURES TO PREVENT EDGOSON OF FRESHEY GRADED AREAS LINES SHOW THE AS PERSANDIT DRANAGE AND EROSON CONTROL MEASURES HAVE BEEN INSTALLED.
- ALL AREA TO BE FILLED SHALL BE PREPARED TO BE FILED AND FILL SHALL BE PLACED IN ACCORDANCE WITH THE SPECIFICATIONS.

 ALL YEAR SET BE MATERIA AND ORDERCHOMAGE MATERIAL SHALL BE REMOVED BY THE CONTRACTOR FROM THE SUFFACE UPON WHICH BE FILL IS TO BE PLACED. LOOS FILL AND ALLUMAN, SOKE SHALL BE REMOVED TO SUBTRIES FIRM NATURAL GROUND. THE EXPOSED TO A MANDAIN COMPACTOR TO A MANDAIN OF SO PERCENT, IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO PLACE, STHEAK, WARTH AND COMPACTOR BEST STREET ACCORDANCE MITH THE APPROVED SOLS REPORT.
- IN STREET ACCORDANCE WITH THE APPROVED SOUS PERFORM.

 10. CUT AND FILL SLOPES SHALL BE OUT AND FRAMED TO FINISH GRADE TO PRODUCE SMOOTH SURFACES AND UNFFORM CROSS SECTIONS. THE SLOPES OF DOCAMATIONS AND DISTANCEMENTS SHALL BE SHAPED, PLANTED, AND TRANSPORT AS DISTANCEMENTS SHALL BE SHAPED, PLANTED, AND ORDERY CONDITION. ALL STOKES, REDIS, AND ORDER WASTE MATTER SPONSED OF EXCHANGION OR DEBANKMENT SLOPES WHICH ARE LIABLE TO RECOME LOOSENED SHALL BE RELIGIOUD AND DESPOSED OF. THE TOP AND TOP OF ALL SLOPES SHALL BE ROUNDED IN ACCORDANCE WITH THE GRADING ORDINANCE.
- THE SPRING CHARLES AND OTHER GRECTOWINE MATERIA, SHALL BE COLLECTED, PLEED OR OTHERWISE DESCRIBE OF OUT THE SIZE SIT THE CONTRACTOR SO AS TO LEAVE THE AREAS THAT HAVE ESTEL CLEARD WITH A PERT ALTO AND APPEARANCE FREE FROM LINCOMETY DESSES, APPROVAL OF LOCATION OF DESSESS HAVE SHALL BE SCLINED THOM THE SOURCE DESCRIPTION OF DISCOVERY AND OUT FROM THE OWNER PRIOR FROM TO THE OWNERS APPROVED TO THE OWNERS PRIOR FROM TO THE OWNERS APPROVED THE OWNERS PRIOR FROM TO THE OWNERS APPROVED T



VICINITY MAP

NO SCALE

PLANS FOR THE WIDENING OF MANCHESTER AVENUE

FROM VIA POCO TO EL CAMINO REAL

GENERAL NOTES:

- A PERMIT SHALL BE OBTAINED FROM THE ENCINTAS ENDINGERING SERVICES DEPARTMENT FOR ANY WORK WITHIN THE STREET HONT-OF-WAY. NO FEE MILL BE REGURED.
- 3. ALL UNDERGROUND UTLITES WITHIN THE STREET RIGHT-OF-WAY SHALL BE CONSTRUCTED, CONNECTED AND TESTED PROP TO CONSTRUCTION OF BERM, CURB, CROSS GUITTER AND PAYMOR.
- 4. THE EXISTENCE AND LOCATION OF DESTING UNDERSTOUND FACULTIES SHOWN ON THESE PLANS WERE OBTAINED BY A SEARCH OF THE AVAILABLE RECORDS. TO THE BEST OF OUR INFORMEDOS, THERE ARE NO OTHER EXISTING FACULTES EXCEPT AS SHOWN ON THESE PLANS. HOWEVER, THE CONTRACTION IS REQUIRED TO TAKE PRECAUTIONARY MEASURES TO PROTECT ANY EXISTENCE AND EXISTING FACULTY SHOWN HEREON AND ANY OTHER WHICH IS NOT OF RECORD OR NOT SHOWN ON THESE PLANS.
- 5. LOCATION AND ELEVATION OF IMPROVIMENTS TO BE MET BY WORK TO BE DONE SHALL BE COMPINED BY FIELD MEASUREMENTS PROFIT TO CONSTRUCTION OF IMPROVIMENTS OF FIELD MEASUREMENTS PROFIT TO CONSTRUCTION OF IMPROVIMENTS UNDERSTOUND FACULTIES SUFFICIENTLY AND LOCAST EXISTING HOUSESHOUND FACULTIES SUFFICIENTLY AND DEPOSIT REVENUES AND LOCATE SHOULD TO PERMIT REVENUES TO PLANS IF REVENUES ARE NECESSARY BECAUSE OF ACTUAL LOCATION OF EXISTING FACULTIES.
- THE CONTRACTOR SHALL NOTIFY SAN DEDO GAS AND ELECTRIC COMPANY PRIOR TO STATEMO WORK NEAR COMPANY FACULTES AND SHALL CONCENSATE HIS/HER WORK WITH COMPANY REPRESENTATIVES.
- B. FOR LOCATION OF CABLES AND APPLICTENANCES CONTACT (800) 422-4133.
- THE CONTRACTOR SHALL BE RESPONSIBLE THAT ANY MOMENT OR BENCH MARK WHICH IS DISTURBED ON DESTROYED SHALL BE RESIMBLED AND REPLACED BY A REGISTERED CIVIL ENGINEER OR A LICENSED LAND SURVEYOR.

Construction contractor agrees that in accordance with generally excepted construction precisions construction, contractors will be required in seamons sale and complete reproduction for the project including parties of the project including addition of the project including addition of the project including addition of the project including addition of the project including addition of the project including addition of the project including addition of the familial for accordance accordance and power and contraction of the project including additional accordance within the design professional formation design project excepting states and the project excepting states from the sale negligeness of design professional accordance with the project excepting states from the sale negligeness of design professional accordance and design professional ac

- ALL WORK SHALL BE-DONE IN ACCORDANCE WITH THE STANDARD SPICIFICATIONS FOR PUBLIC WORKS CONSTRUCTION (LATEST EDITION), THE SAN DEDOS STANDARD SPICIAL PROVISIONS TO THE STANDARD SPICIFICATIONS FOR PUBLIC WORKS CONSTRUCTION (ADOPTED BY THE SAN DEGO RECOMAL STANDARDS COMMITTEE). AND THE SAN DEGO RECOMAL STANDARD CHAMMOS (LATEST EDITION).
- 12. ALL GRADOG ACTIVITY SHALL BE PROHISTED BETMEN OCTOBER 1 AND APRIL 1 OF ANY YEAR.

OLIVENHAIN MWD WATER NOTES:

- WATER WORKS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE DETAILS AND MATERIALS AS SPECIFICD IN THE CONSTRUCTION OF WATER WARS AND STANDARD SPECIFICATIONS FOR THE CONSTRUCTION OF WATER WARS AND FACULTIES, GAITED MARCH 1997 WITH REVISIONS. CONTRACTOR SHALL HAVE A QUIETEM COPY OF THE STANDARD SPECIFICATIONS ON THE JOB STEEL AT ALL TIMES.
- THE SUBMISSION AND REVIEW OF ALL SUBMITTALS (SHOP DRAWNOS, SX SETS) AS REQUERD BY THE STANDARD SPECIFICATIONS ARE TO BE ACCOMPUSHED PROR TO THE PRECONSTRUCTION MEETING WITH THE DISTRICT'S INSPECTION.
- MADE REVAINS AND GRACES ARE NOT SHOWN ON THE MATER WAN PROFILE.
 TOP OF FIRST PROFILE IS 46-MONES BELOW CONTERNAL OF FINISH GRACE OF
 STREET.
- NOTIFIE A WARMAN 1-NICH WATER SERVICE TO EACH LOT, METER TO BE LOCATED 5-FEET FROM A SOE LOT LINE. A 3/4-NICH HIGH LETTER "M" SHALL BE CHOSEN IN TOP OF CHOSTNO CARB OR MATRITION IN MEW CARD AT ALL WATER SERVICE CROSSNOS.
- WATER SERVICE CHOISSINGS.

 6. MOUNT AND RELEASE SOUTH SE SIGNALED AT ALL HIGH POINTS AND BLOW-OFFS AT ALL LOW POINTS IN DISC WATER WAS PROPER. FIRST HERMATS MAY BE USED IN LIEU OF A MANUAL ARE RELEASE OR BLOW-OFF WHICH LOCATED AT OR MARK HIGH OF LOW POINTS AN APPRICADE OF THE CISTINGT'S REP.
- UMLESS OTHERWISE MOTED, CONNECTIONS TO EXISTING MAINS SHALL BE MADE DRY. THE THE AND DURASION OF ANY SHATEOMES OF EXISTING MAINS SHALL BE SURJECT TO APPROVAL BY THE DISTRICT. DISTRICT SHALL BE HOTHERD THO MEDIS MINISM IN ADVANCE OF ANY SHATEON.
- CONTRACTOR SHALL COORDINATE WITH DISTRICT ALL ARRANGUENTS FOR HOS-LINES TOMPORARY SERVICES, ETC., PROR TO SHUTDOWNS.
 HO SHUTDOWNS WILL BE SCHEDULED ON A PRIDAY.
- UNE VALVES, WHERE REQUIRED AT STREET INTERSECTIONS SHALL BE LOCATED ON THE PROCONDATION OF THE STREET ROUT-OF-WAY WHENEVER POSSIBLE.
- FIRE HYDRANTS, AS APPROVED BY THE APPROPRIATE FIRE DISTRICT AND MEETING THE DISTRICTS STANDARD SPECIFICATIONS, ARE TO BE INSTALLED AT LOCATIONS SPECIFIED BY THE FIRE DISTRICT.
- CONTRACTOR SHALL REVIEW ALL PROPOSED TRONGH WORK WITH CAL/DISH. A COPY OF EXSMPTION LETTER OR TREMOHRO PERMIT, IF REQUIRED, SHALL BE SUBMITTED TO THE DISTRICT PRIOR TO CONSTRUCTION.
- ALL EXSTRU FACULTES WHICH WAY AFTECT FINAL DESIGN, W., LINE CROSSINGS, LIME PARALLELING, OR PROPOSED CONNECTIONS SHALL BE FIELD MEMBER. ALL EXSTRUCT OR PROPOSED UTILITY CROSSINGS, OR UTILITIES WHICH 10—FELT OF PROPOSED WATER MAINS, SHALL BE SHOWN ON MERCURENT PLANS.
- 13. ALL WATER SERVICES FOR RESIGNED, JAMATPLE RESIDENTIAL COMPLEXES AND COMMERCIAL OR HOUSTRAL DEVELOPMENTS SHALL HAVE AN APPROVED BADDELOW PREVIOUS DEVICE ON CUSTOWER'S SIDE OF WATER METER.
- 14. THE WATER SYSTEM SHALL BE PRESSURE TESTED IN ACCORDANCE WITH THE PRODUCTURES IN THE STANDARD SPECIFICATIONS. THE CLASS OF PIFE SHALL BE USED AS THE DESIGNATED MORNOUS PRESSURE FOR TESTING ALL-PIPE, VALVES (CLOSED) AND APPLIETINANCES.
- CONTRACTOR TO THE OFF ALL VALVE LOCATIONS AND PROVIDE WRITTEN DAILINGONS TO INSPECTOR IMMEDIATELY UPON INSTALLATION OF VALVES.
- 18. ALL DEFLICTIONS (MOREONIAL AND MERTICAL) SHALL BE MADE BY USE OF JOINT COUNTINGS WITH 4" MASSAM DEFLICTION FOR COUNTING (2" PER JOINT). NO BOYONG (CURVING) OF PPE SHALL BE PERMITTED.
- 17. PETLINE AND APPURITHMANCES SHIEL BE DESIRECTED IN ACCORDANCE WITH SECTION 19041 OF THE STANDARD SPECIFICATIONS PRIOR TO TIE-IN OR CONSECTION 190 DISTING SYSTEM FACULTIES. EACTEROLOGIC QUALITY TEST RESULTS SHIEL CONTORN TO THE CRITERA SPECIFIED IN PARAGRAPH 200 THAT SPECIFICATION SECTION.
- IS, METER BOXES FOR 2-MOH SERVICE OR SAMLLER SHALL BE FREERILASS RESIDENCED POLYMER CONCRETE (ISPC) MANUFACTURED BY ARMORCAST PRODUCTS COMPANY, COR SYSTEMS CORPORATION, OR APPROVED EDUAL.

- EQUIPMENT AND WORKERS FOR EMERGENCY WORK SHALL BE MADE AVAILABLE AT ALL THEIS DURING THE RAINY SEASON. ALL HECCESSARY MATERIALS SHALL BE STOOMSHED ON SITE AT CONVENENT LOCATIONS TO FACULTATE RAPID CONSTRUCTION OF TEMPORARY DEVICES WHEN RAIN IS BAMPLET.
- THE CONTRACTOR SHALL RESTORE ALL EROSION CONTROL DEWCES TO WORKING OFFICE TO THE SATISFACTION OF THE CITY ENGINEER AFTER EACH RUN-OFF PRODUCING SAMPALL.
- THE CONTRACTOR SHALL INSTALL ADDITIONAL DROGON CONTROL MEASURES AS MAY BE REQUIRED BY THE CITY OF ENCINTAS ENGINEER DUE TO ANY RECONSTRUCT GRADING OPERATION OR UNFORSEEN CRICIASTIANCES MINCH MAY ARSE.
- THE CONTRACTOR SHALL BE PESPONSIBLE AND SHALL TAKE NECESSARY PRECAUTIONS TO PREVENT FUBLIC TRESPASS ONTO AREAS MICH IMPOUNDED WATERS CREATE A HAZARDOUS CONCINON.
- GRADED AREAS AROUND THE PROJECT PERMETER MUST GRAIN ARMY FROM THE FACE OF SLOPE AT THE CONCLUSION OF EACH WORK DAY.
- SHOULD GENERATION OF HYDROSEEDED SLOPES FAIL TO PROVIDE ETFECTIVE COMMUNIZE OF GRADIO SLOPES (BOX COMERACE) PRIOR TO MOVEMBER 15, THE SLOPES SHALL BE STABILIZED WITH PURCHED STRAIR RESTALLED IN ACCOMPANCE WITH SECTION 35.023 OF THE EROSION AND SEDIMENT CONTROL HANDBOOK OF THE STATE OF CALIFORNIA DEPARTMENT OF CONSERVATION.
- 10. HYDROMULCH ALL GRADED 2:1 SLOPES PER SPECIFICATIONS.

SHEET INDEX

OLIVENHAIN MUNICIPAL WATER DISTRICT POTABLE WATER SYSTEM APPROVAL

RCE 48853 DATE JOB NO Signature Expires 2 Years After Date



WORK TO BE DONE

THE IMPROVEMENTS CONSIST OF THE FOLLOWING WORK TO BE DONE ACCORDING TO THESE PLANS, AND THE FOLLOWING SPECIFICATIONS AND STANDARD DRAWN

- "GREENBOOK" STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION (1997 FD/TOAL).
- 2. CALFORNA DEPARTMENT OF TRANSPORTATION, "MANUAL OF TRAFFIC CONTROLS FOR CONSTRUCTION AND MAINTENANCE MORK ZOKES,"

 3. NA DECITION.)

 3. NA DECITION.)
- "WATCH" HANDBOOK.

 4. OLIVENIAN WATER DISTRICT STANDARD SPECIFICATIONS FOR CONSTRUCTION
- 5. STATE OF CALIFORNIA STANDARD SPECIFICATIONS-JULY 1992.

STANDARD DRAWNOS

1. COUNTY OF SAN DIEGO REGIONAL STANDARD DRAWNOS-MARCH 1997.

2. STATE OF CALIFORNIA STANDARD PLANS-JULY 1992.

DESCRIPTION EXISTING CONTOURS	STD DWG	SYMBOL 120
PROPOSED CONTOURS CRADED SLOPES	-	V-120
PROPOSED SPOT ELEVATORS LOT UNE DAYUGHT LINE RIGHT-OF-WAY LINE		
STORM DRAIN (SIZE PER PLAN	0-60	====50===
AC RERM - TYPE D	0-5	
CURB & QUITER	0-2	
AC PAYEMENT	SEE GEN. NOTE 2	
ASPHALT SPILLWAY AC OVERLAY	SCC OCTAL, SHEET 8	
CONCRETE DRIVEWAY	G-148	A STATE A
TYPE B PEDESTRAN RAMP	0-27	£3
8" PVC WATER LINE WATER LINE ELBOW W/ RESTR. WATER LINE END CAP		
WATER SERVICE LATERAL EXIST RECLAMED WATER LINE		-
DOST CABLE TELEVISION LINE DOST WATER LINE		civ
EXIST SEWER LINE		5
EXIST ELECTRICAL		
EXIST TELEPHONE		т
EXIST GAS MAIN		c
EXIST STORM ORAIN		THE USD DEED
ASSESSORS PARCEL MUMBER: ASPHALT SPELWAY	SEE DETAIL SHEET 8	

TOPOGRAPHY:

TOPOGRAPHY IS BY SAN-LO ADRAL SURVEYS, DATED 5/7/MG, SUPPLEMENTED BY A FIELD SURVEY PERFORMED IN APPIL OF 1998 BY MOLTE AND ASSOCIATES

EARTHWORK:

CUT - 7.465 C.Y.

FILL = _7.465_ C.Y.

DECLARATION OF RESPONSIBLE CHARGE

I HEREBY DECLARE THAT I AN THE ENGINEER OF WORK FOR THIS PROJECT, THAT I HAVE EXERCISED RESPONSIBLE CHARGE OVER THE DESIGN OF THE PROJECT AS DEFINED IN SECTION 6003 OF THE GUISNESS AND PROFESSIONS CODE, AND THAT THE DESIGN IS CONSISTENT WITH CURRENT STANDARDS.

I UNDERSTAND THAT THE CHECK OF PROJECT DRAWNOS AND SPECIFICATION BY THE CITY OF DICTORIS IS CONTINED TO A REVIEW ONLY AND DOES NOT RELIEVE ME, AS ENGINEER OF WORK, OF MY RESPONSIBILITIES FOR PROJECT DESIGN.





NOUTE REBURD CORP DATE DEPARTMENT DRAWING NO.

CITY OF ENCINITAS ENGINEERING DEPARTMENT DRAWING NO.

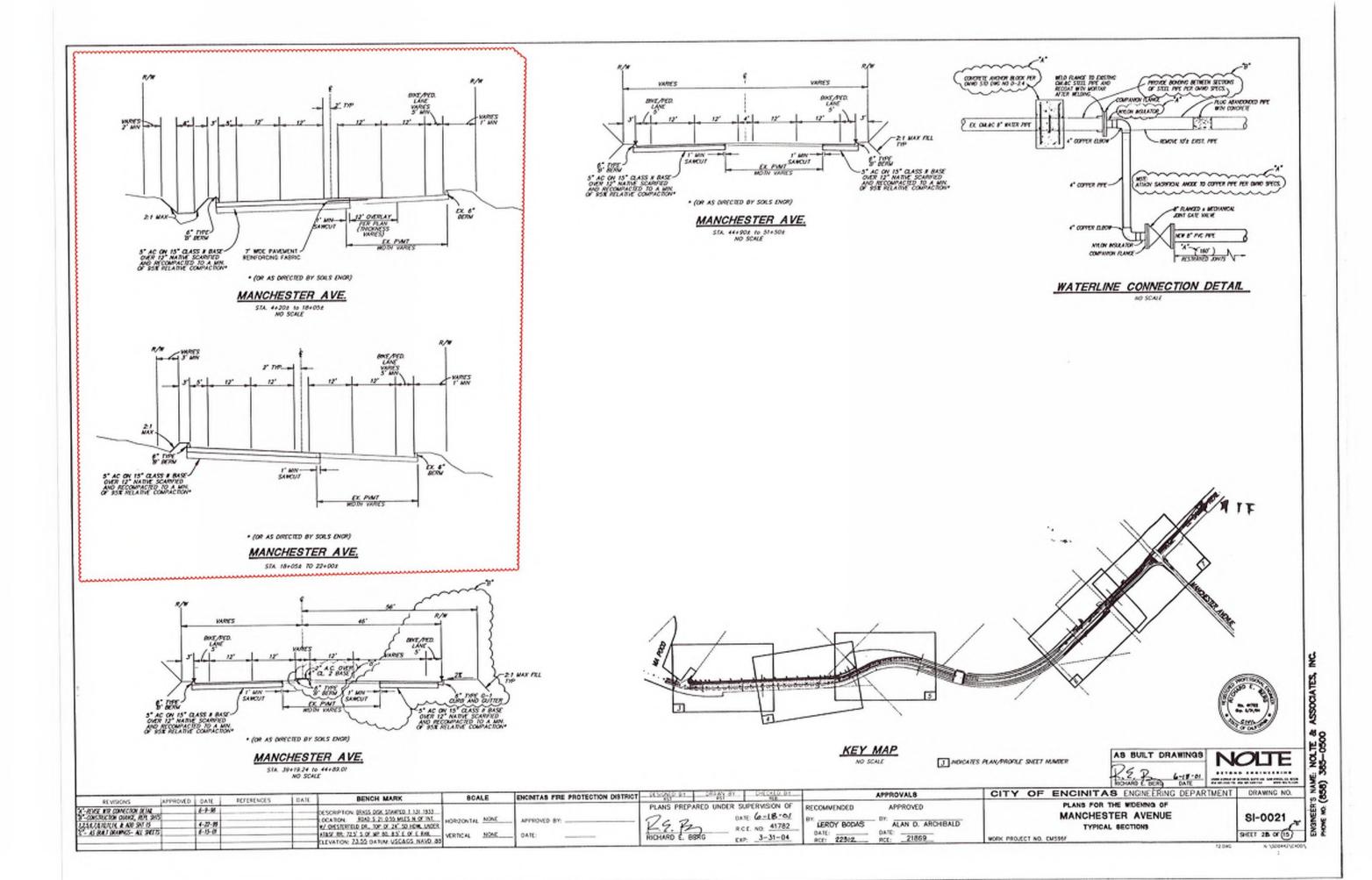
ENCONTAG FIRE PROTECTION DISTRICT (ESCONE) BY [FANN BY | DECKED BY APPROVALS PPROVED DATE PEFERENCES REVISIONS. PLANS PREPARED UNDER SUPERVISION OF PLANS FOR THE WIDENING OF APPROVED - PORCE WIT CONFECTION DETA - CONCRECTION CONFIX. REP. DESCRIPTION BRASS DISK STAMPED J 131 1933 DATE 6-18-01 MANCHESTER AVENUE R.S. P. HORIZONTAL NONE LEROY BODAS BY ALAN D. ARCHBALD APPROVED BY -R.C.E. NO. 41782 W/ CHESTERFELD OR, TOP OF 24" SD HOW, UNDER TITLE SHEET/SHEET INDEX MAP 1145F 88, 725'S OF MP 80, 85' L OF L RAL VERTICAL BONE. DATE Emp 3-31-04 223/2. WORK PROJECT NO. CMS96F LEVATION: 23.55 DATUM USCASS NAVO &

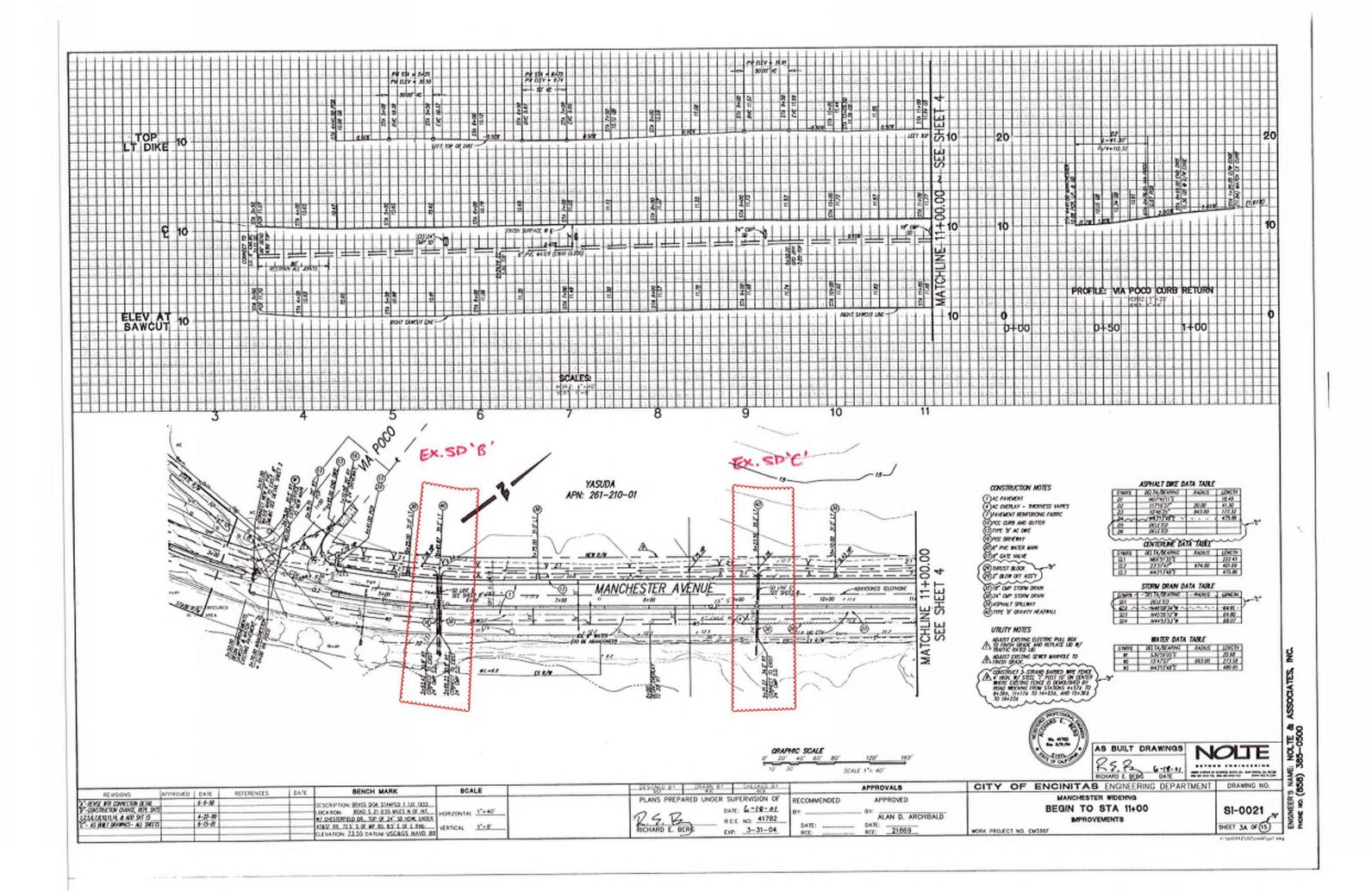
California Council of CMI Engineers

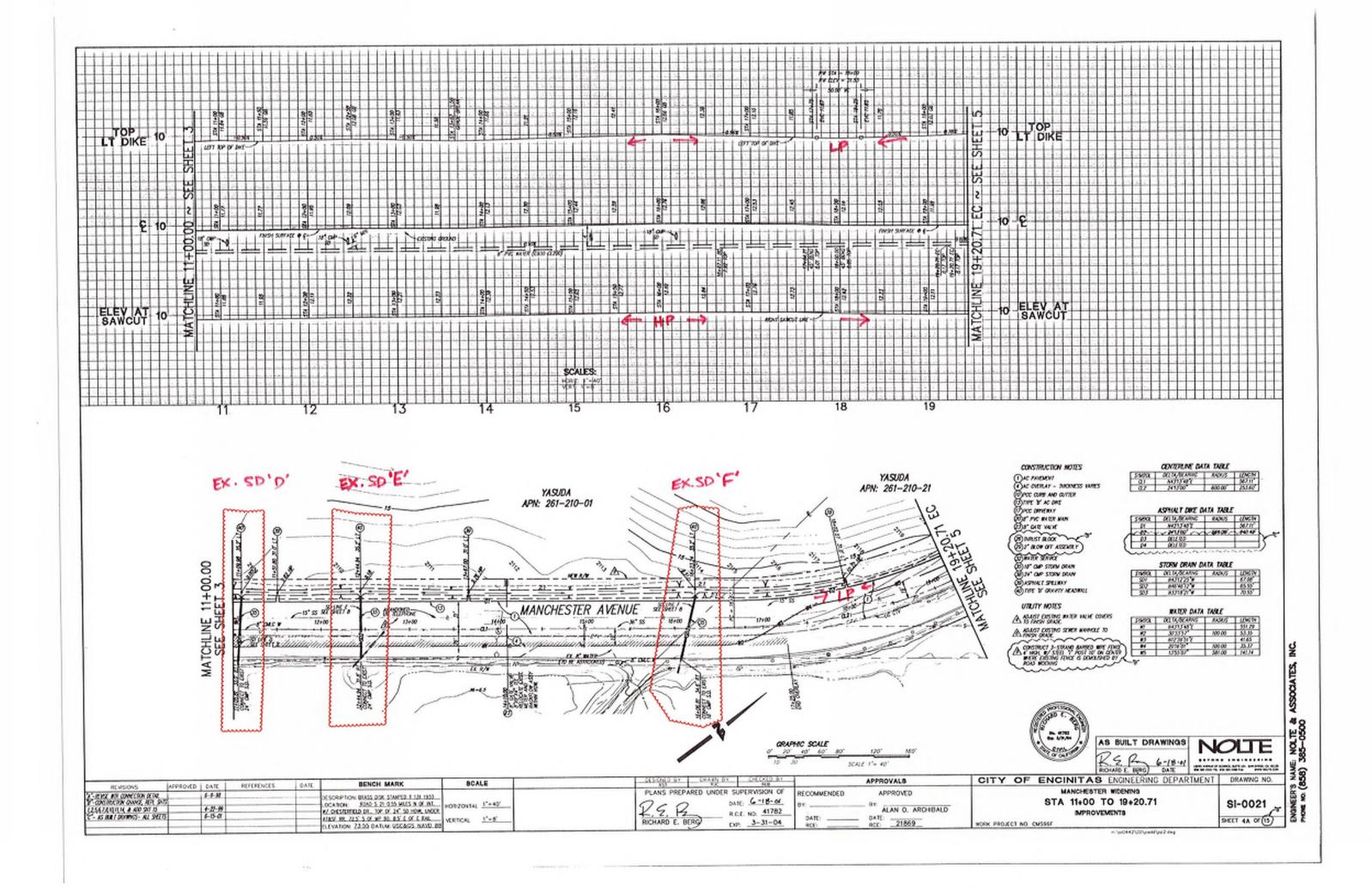
& Land Surveyors

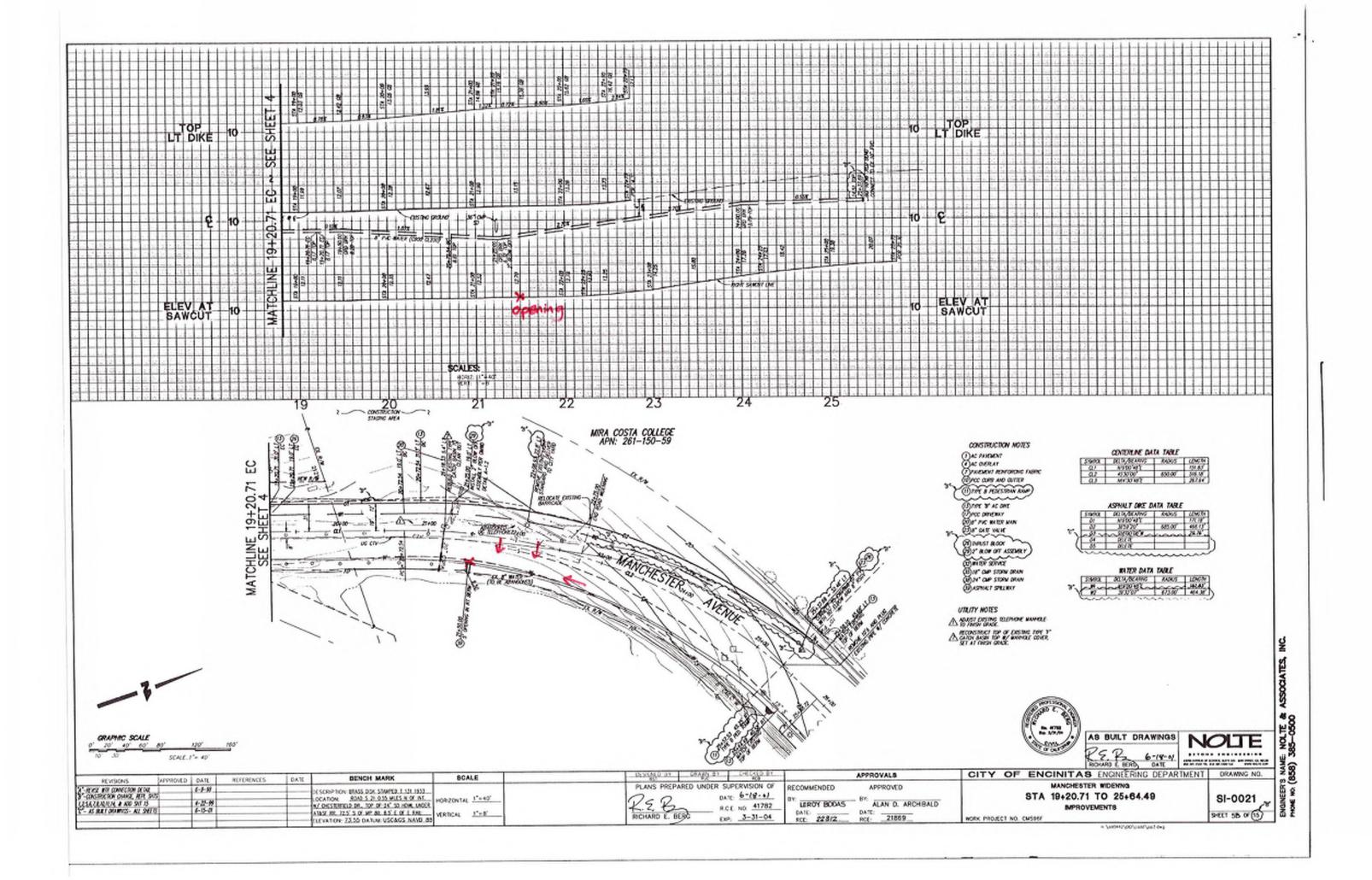
81-0021 SELT IS OF (15)

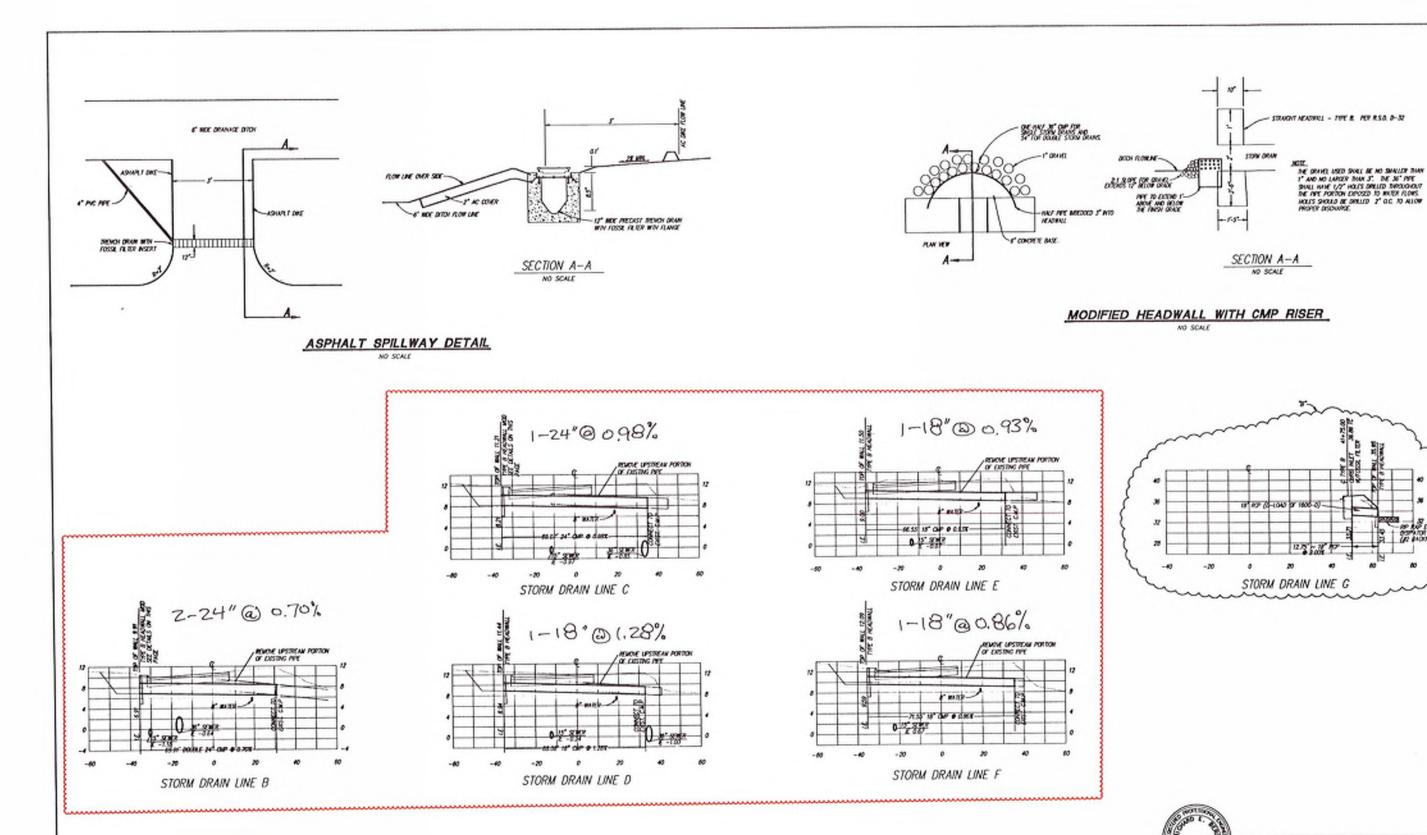
48







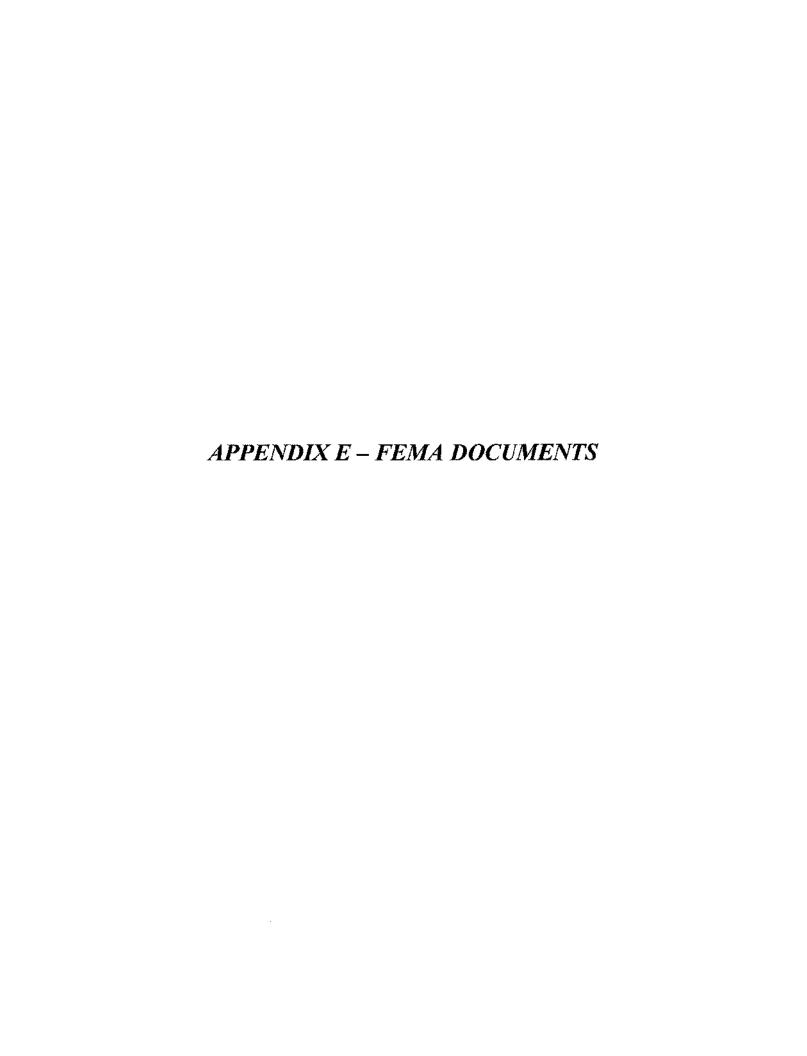




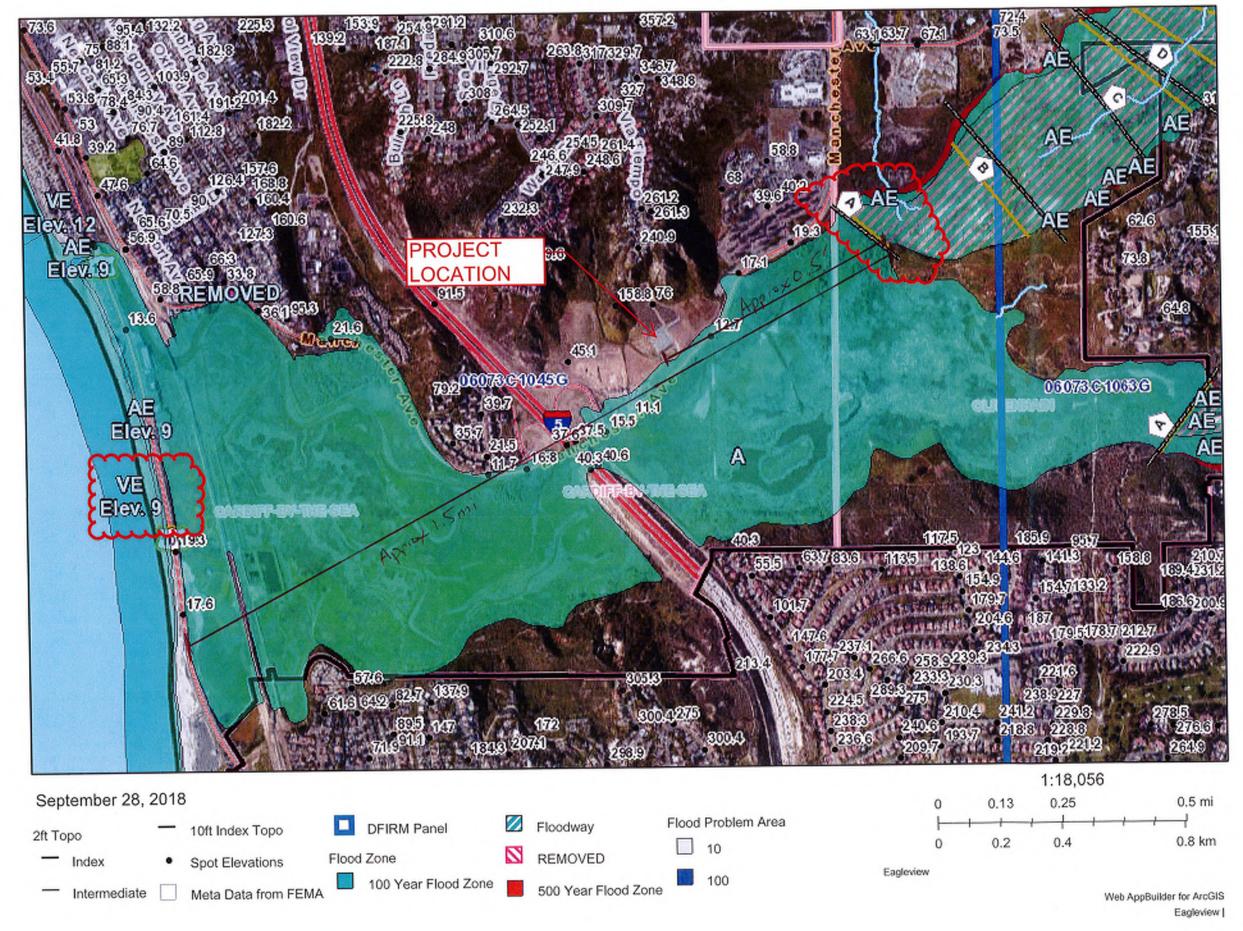
							Q S P (1) 10 1 10 10 10 10 10 10 10 10 10 10 10 1	
REVISIONS	APPROVED	DATE	REFERENCES	DATE	BENCH MARK	SCALE	CLESCALD BY GRANGE CHCORD BY APPROVALS CITY OF ENCINITAS ENGINEERING DEPARTMENT	DRAWNG NO.
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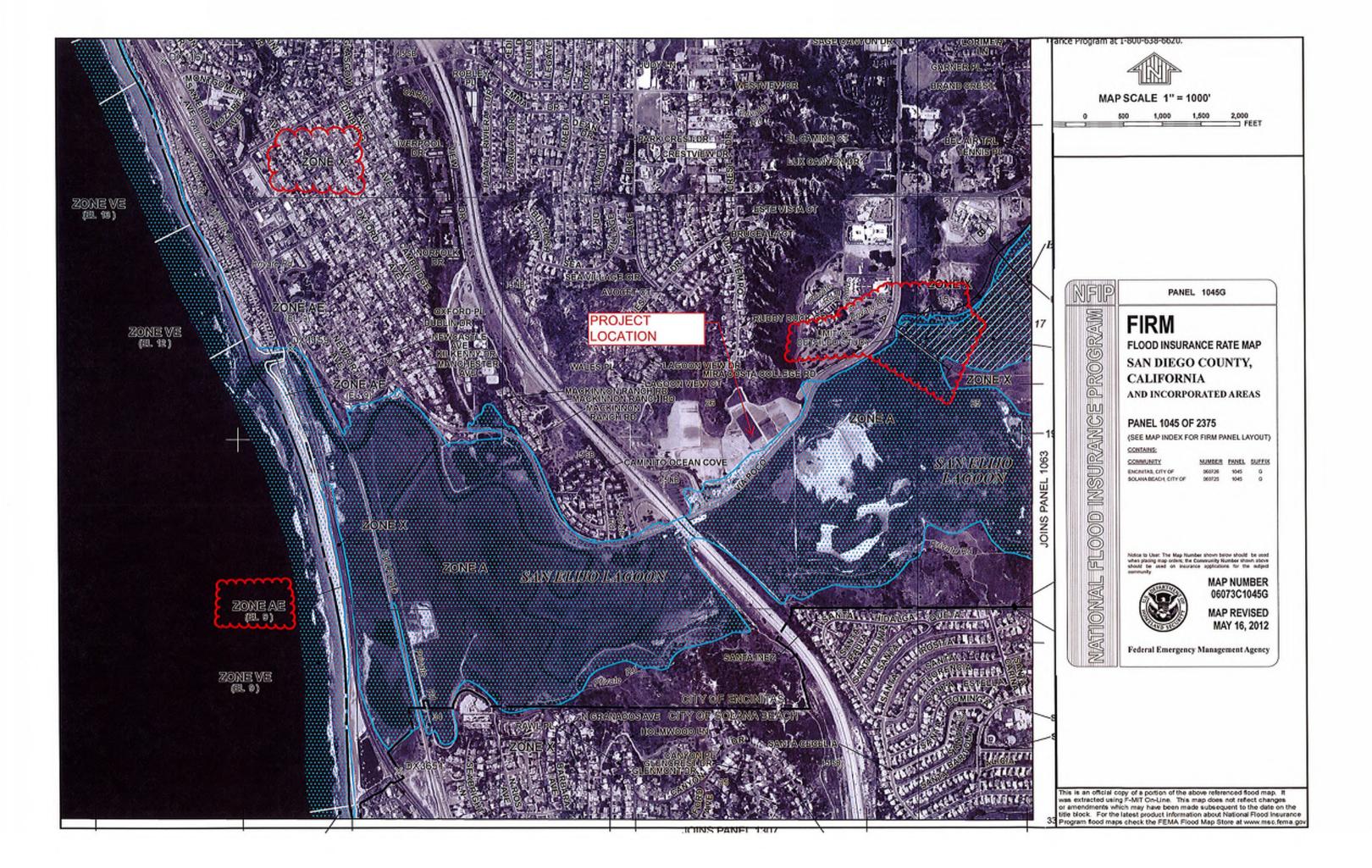
AS BUILT DRAWINGS

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ArcGIS Web Map





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1-PERCENT-ANNUAL-CHANCE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)	WITH FLOODWAY	4.51 4.71 4.7.9 4.7.9 5.0.9 5.0.9 6.0.0 6.		DATA	ESCONDIDO CREEK (AT ENCINITAS)
CENT-ANNUA	WITHOUT	15.4 17.3 17.8 18.3 20.8 30.7 35.4 42.6 42.6 47.5 57.9 57.9 62.7 67.5		FLOODWAY DATA	O CREEK
1-PEF WATER-	REGULATORY	45.4 47.8 18.3 20.8 20.8 30.7 34.2 35.7 35.7 48.0 53.7 59.9 62.7 67.5			ESCONDIC
	MEAN VELOCITY (FEET PER SECOND)	8.88 8.87 9.22 9.24 9.25 9.30 9.30 9.30 9.30 9.30 9.30 9.30 9.30			
FLOODWAY	SECTION AREA (SQUARE FEET)	3,065 8,331 6,299 4,902 2,664 1,750 10,475 8,004 2,942 4,633 3,152 3,569 5,392 4,861 3,569 5,392 1,835 1,835			
	WIDTH (FEET)	668 1,290 1,230 1,230 1,265 3,12 1,126 400 400 778 580 550 977 1,005 1,163 858 858 254		FEDERAL EMERGENCY MANAGEMENT AGENCY	D AREAS
URCE	DISTANCE1	11,025 12,569 14,054 14,054 14,887 16,040 17,729 18,531 20,672 20,672 23,639 25,313 25,313 25,313 25,313 25,313 25,313 25,313 25,313 25,313 25,313 25,313 25,313 25,313 25,313 25,313 30,905		RGENCY MANAG	SAN DIEGO COUNTY, CA AND INCORPORATED AREAS
FLOODING SOURCE	CROSS SECTION	Escondido Creek (At Encinitas) AAA BBAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA	Feet Above Pacific Ocean	FEDERAL EMER	SAN DE
				JAT .	3LE 13

Environmental Impact Report / Environmental Impact Statement for the

San Elijo Lagoon Restoration Project

Final SCH# 2011111013









Prepared for: U.S. Army Corps of Engineers 5900 La Place Court, Suite 100 Carlsbad, CA 92008

Prepared for:

County of San Diego Department
of Parks and Recreation
5500 Overland Avenue, Suite 410
San Diego CA, 92123

Administrated by: San Elijo Lagoon Conservancy P.O. Box 230634 Encinitas, CA 92023-0634



San Elijo Lagoon Restoration Project Hydrology/Hydraulic Study

Final Report

June 2012

Revised: March 14, 2014

Amended: July 18, 2014

Prepared for:

The San Elijo Lagoon Conservancy

Prepared by:



3780 Kilroy Airport Way Suite 600

Long Beach, CA 90806

Environmental Impact Report/Environmental Impact Statement for the San Elijo Lagoon Restoration Project Volume 2 of 4

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APPENDICES

Α	Sampling and Analysis Plan Results Reports
В	NOP and Special Public Notice/NOI and Comment Letters
C	Regulatory Setting
D	Hydrology/Hydraulic Study
E	Water Quality Study
F	Biological Resources Technical Report



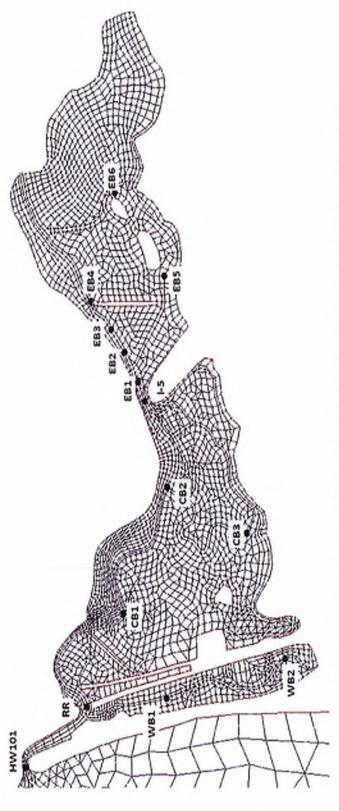


Figure 4-19: Virtual Gage Locations for Existing Conditions and Alternatives 1A and 1B

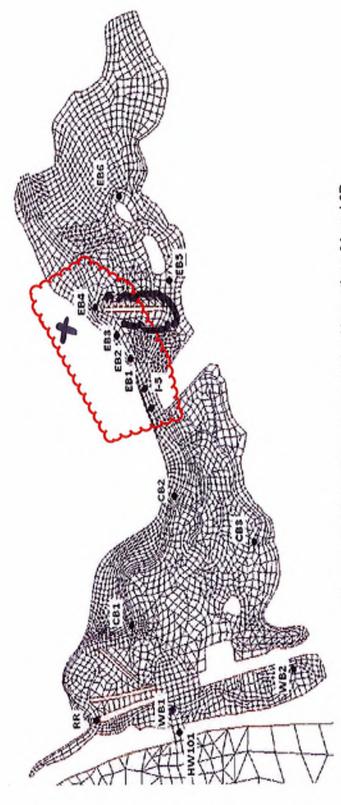


Figure 4-20: Virtual Gage Locations for Alternatives 2A and 2B



Manchester Avenue in the East Basin will be flooded during the combined event. However, the flood water level will be reduced by one half of a foot with proposed Alterative 1A. The table also shows the existing surface elevation of Manchester Avenue for comparison.

In contrast, the results also indicate that the maximum water level will be below Manchester Avenue for Alternatives 1B and 2A. Storm flood water levels are clearly reduced by the project upstream of I-5. Alternative 2B would provide similar flood water level reduction as Alternative 2A although it was not modeled as it was eliminated from consideration by the Lagoon Conservancy from being carried forward in environmental review. Alternatives 2A & 2B may not provide a 3 foot freeboard required by FEMA, but the future condition should be an improvement over existing flood conditions.

Table 4-5: Maximum 100-Year Flood Elevation (ft, NGVD) in the Wetlands in 2015 Based on +5.4-ft NGVD (Recorded Highest) Downstream Tidal Elevation

Virtual Gage Locations	Manchester Avenue Elevation	Existing	Alt 1A	Alt 1B	Alt 2A				
HW101	N/A	5.3	5.3	5.3	5.3				
RR	N/A	8.5	7.9	8.1	6.3				
CB1	29.0	8.9	8.4	8.7	6.5				
CB2	9.8	9.0	8.5	8.7	6.7				
I-5	12.7	9.4	8.9	8.8	7.3				
EB1	12.9	9.8	9.8	8.8	7.5				
EB2	9.3	12.3	11.7	9.0	8.1				
EB3	10.3	12.4	11.7	9.0	8.3				
EB4	10.4	12.3	11.8	9.0	8.4				
	Note: Values in red indicate elevations above the roadway and represent flooding.								

4.4.2 Tidal Hydraulics and Hydrology for 2015

The purposes of the tidal hydraulic studies are to:

- Predict tidal elevations and flow velocities over time and space within the Lagoon, as compared to the open ocean (to serve as the basis for analyses of water quality and shoaling, and other related studies);
- Determine the tidal inundation frequency in the wetlands to determine probable habitat distribution; and
- Predict the statistics of tidal inlet hydraulics for the inlet design and stability analyses.



Results consist of the following:

- Storm flows combined with highest measured high tides will result in elevated water levels throughout the Lagoon. Specifically, in 2015:
 - No Project conditions result in Manchester Avenue being flooded by several feet along the East Basin.
 - Alternative 1A (with the inlet in the existing location) provides limited flood reduction potential, however Manchester Avenue will still flood along the East Basin although flood water levels will be lowered.
 - c. Alternatives 1B, 2A and 2B reduce flood elevations to below Manchester Avenue all along its length due to expanded channel cross-sections under all bridges.
- In 2065, Manchester Avenue will experience storm flow flooding along both the Central and East Basins for all alternatives due to adverse effects of sea level rise.
- Tidal flows vary between alternatives as reflected by the following results for 2015:
 - a. For No Project, tidal flows are restricted due to the narrow and meandering channel between Highway 101 and the Railroad, and the presence of a sill at the bed. Tidal ranges are significantly muted for both high and low tides, and muting increases progressively from the West Basin through the East Basin.
 - b. For Alternatives 1A and 1B (with the inlet in the existing location) tidal muting is significantly reduced and circulation is improved in the wetland basins compared to existing conditions. This is due to expansion of the cross-sections under all bridges. A certain amount of muting still will exist, and is greater in the Central and East Basins than in the West Basin.
 - c. For Alternatives 2A and 2B (with the new inlet location) tidal muting is further reduced and circulation is most improved in the wetland basins compared to alternatives using the existing inlet location. This is due to further expansion of the cross-sections under all bridges. Minimal to no muting will exist before sand shoals form within the Lagoon.
- Tidal inundation frequency resulting from tidal hydrology significantly influences the habitat type and distribution on-site. Results for 2015 include:
 - a. For No Project, the vertical zonation of intertidal habitat is relatively narrow at approximately 3 to 4 feet. A progressive decrease in the vertical range of intertidal habitat occurs with distance to the east. A range of salt marsh habitats can occur on-site, but their areas will be constrained by the tidal range, and the habitat distribution on-site may be dominated by fewer species more suited to the muted tidal elevations.
 - For Alternatives 1A and 1B, the vertical zonation of intertidal habitat increases, ranging from 5.7 feet in the West Basin to 5.2 feet in the Central and East Basins. A





Francilles

Charles Management













Frequently Asked Questions

1. THE NEEDS AND GOALS OF RESTORATION 2. THE FINAL RESTORATION PLAN 3. CONSTRUCTION

4. INTERSTATE 5. EXPANSION & THE RAILROAD DOUBLE-TRACKING 6. CEQA/NEPA PROCESS

2. The Final Restoration Plan

The plan adopted is officially called the "Modified Alternative Plan 1B Reduced." What are the main modifications, and why?

The significant last minute modification was to maintain suitable habitat for the Ridgway's Rail (Raillus obsoletus levipes), formerly the Light-footed Clapper Rail, (Raillus longinostris levipes), Since restoration planning began, cord grass speed throughout the Central Basin. Cord grass is the preferred habitat for the Ridgway's Rail, and, since the appearance and spread of the grass, our Rail population has expanded rapidly. Ridgway's Rail are an endangered subspecies of an endangered species so protecting both the Rails and the cord grass was a new and important consideration in the Restoration Project. Consequently, the dredging and excavation methods were modified to minimize disruption. We control water elevations and turbidity to allow for sufficient dredging, while minimizing environmental impacts and providing refugia to enclangered species like the Ridgeway Rail. Cord grass that must be removed will be maintained in a nursery and replanted later in the project. The amount of restored mudflat has been reduced and the amount of cordgrass habitat expanded from that proposed in the original plans.

What are the positive + negative aspects of the final plan?

Why did you removing the berm and Manchester trail in the east basin?

What will become of the "old settling ponds"?

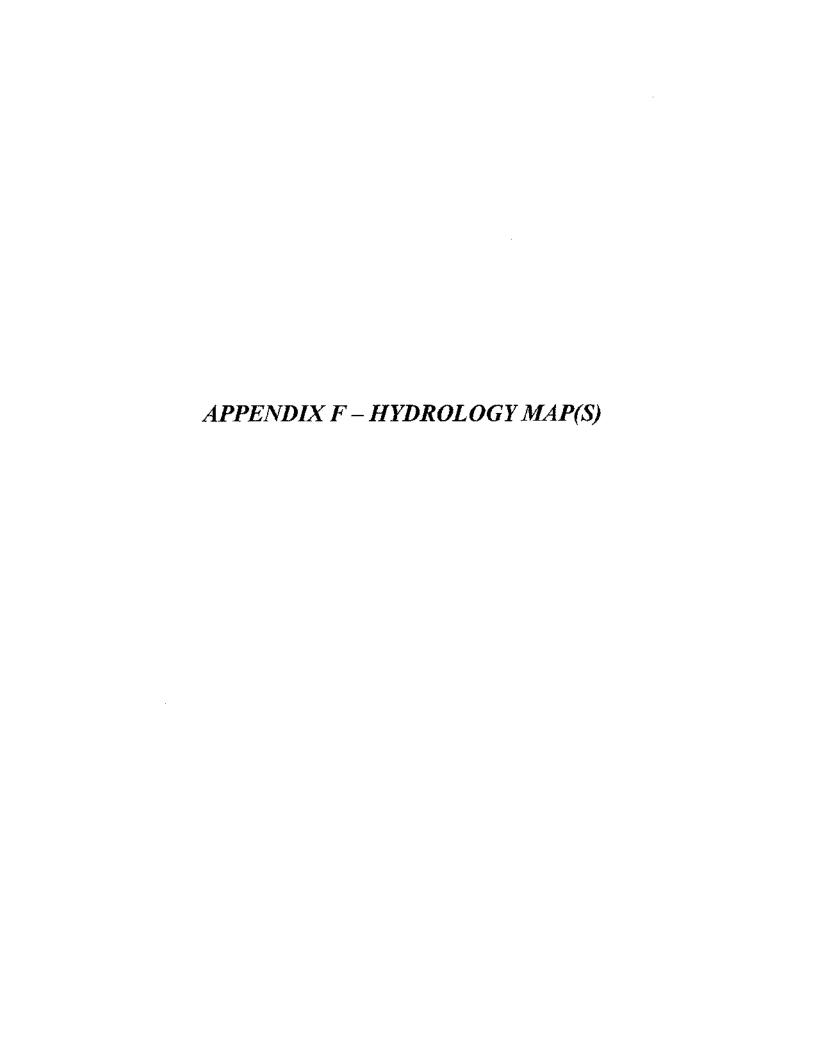
Will restoration impact Cardiff Reef or water quality along the beach?

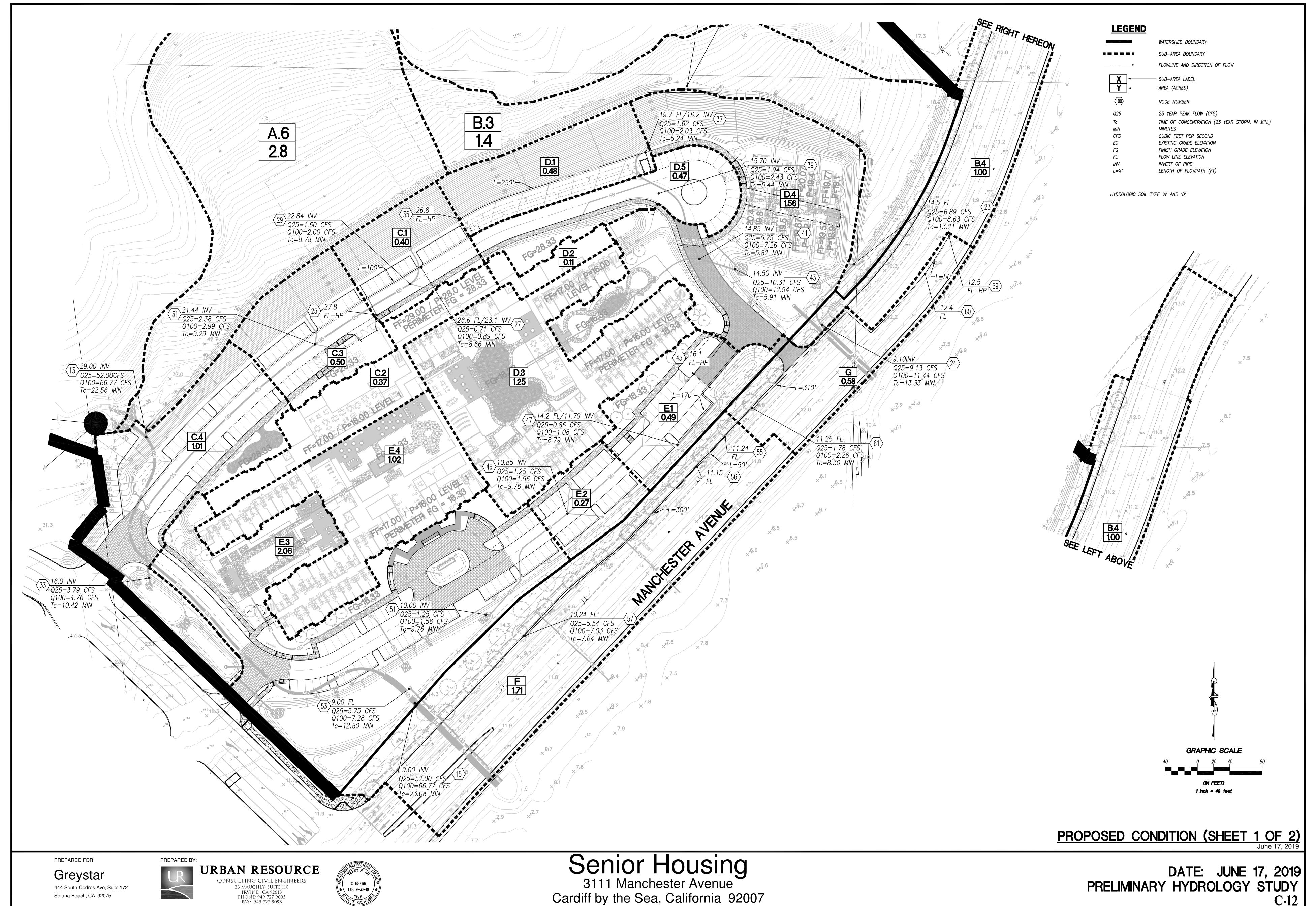
Will the increased exchange of fresh/salt water cause more upstream pollution to be discharged at the beach? Will it destroy the freshwater habitat east of the freeway?

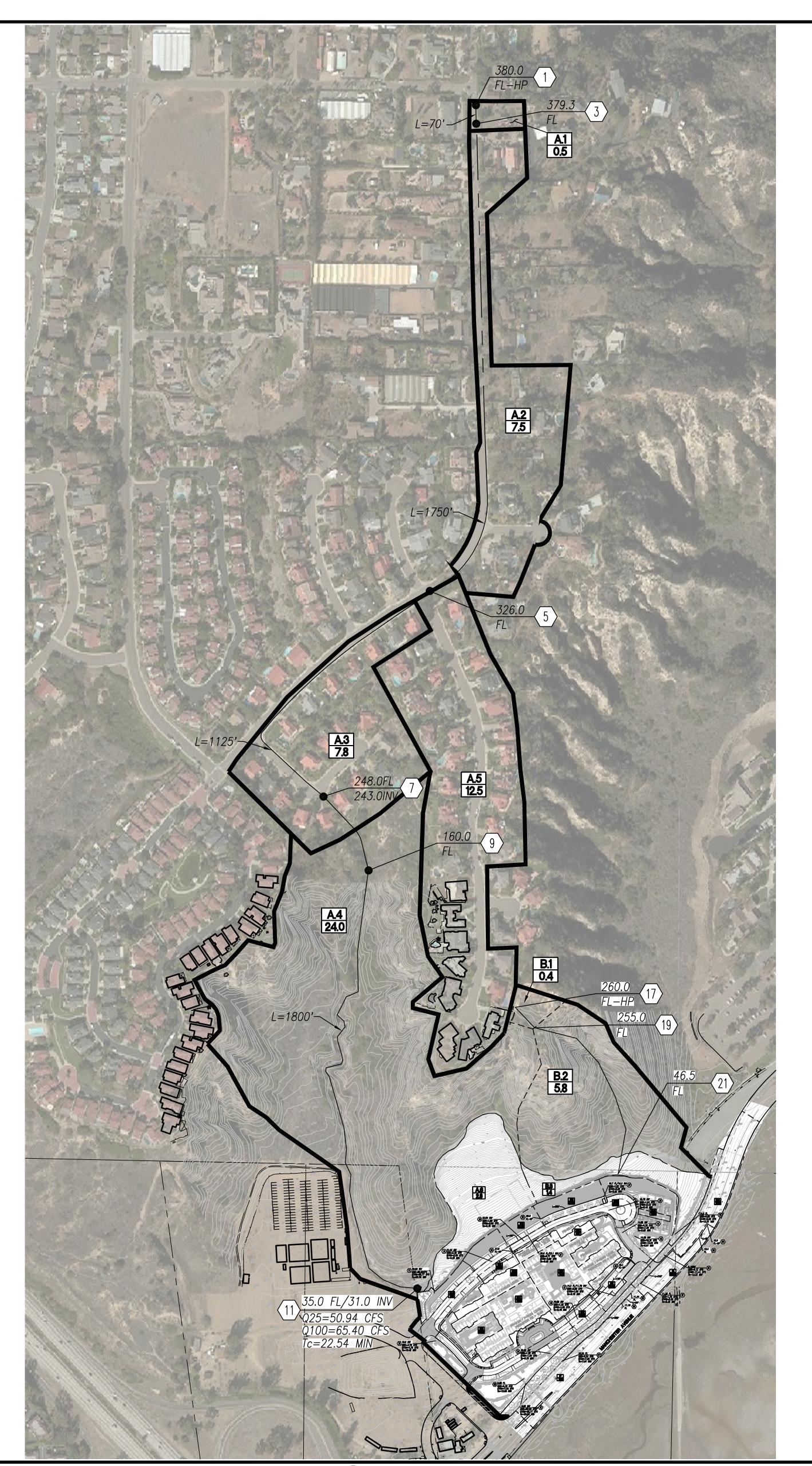
Will the improved circulation eliminate the need for mosquito control?

Will there be new trails? Will I still be able to walk under the freeway? Will there be improved parking around the Reserve? Will we lose any trails?

Will there be any changes to present Reserve regulations?



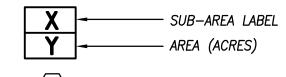






WATERSHED BOUNDARY SUB-AREA BOUNDARY

FLOWLINE AND DIRECTION OF FLOW



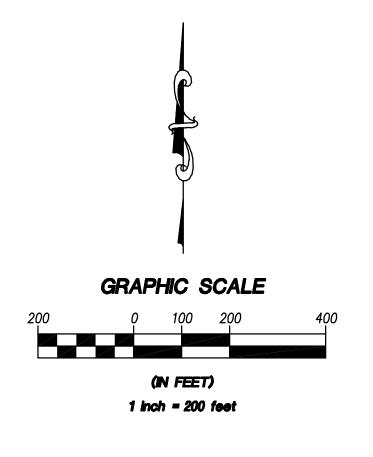
NODE NUMBER

25 YEAR PEAK FLOW (CFS) TIME OF CONCENTRATION (25 YEAR STORM, IN MIN.)

CUBIC FEET PER SECOND EXISTING GRADE ELEVATION

FINISH GRADE ELEVATION FLOW LINE ELEVATION INVERT OF PIPE LENGTH OF FLOWPATH (FT)

HYDROLOGIC SOIL TYPE 'A' AND 'D'



PROPOSED CONDITION OFFSITE (SHEET 2 OF 2)

June 17, 2019

PREPARED FOR: Greystar Solana Beach, CA 92075





Senior Housing
3111 Manchester Avenue
Cardiff by the Sea, California 92007

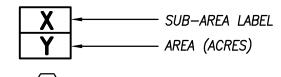
DATE: JUNE 17, 2019 PRELIMINARY HYDROLOGY STUDY C-13





WATERSHED BOUNDARY SUB-AREA BOUNDARY

FLOWLINE AND DIRECTION OF FLOW



NODE NUMBER

25 YEAR PEAK FLOW (CFS) TIME OF CONCENTRATION (25 YEAR STORM, IN MIN.)

CUBIC FEET PER SECOND EXISTING GRADE ELEVATION FINISH GRADE ELEVATION

FLOW LINE ELEVATION INVERT OF PIPE LENGTH OF FLOWPATH (FT)

HYDROLOGIC SOIL TYPE 'A' AND 'D'

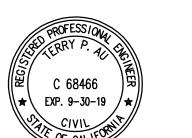
(IN FEET) 1 inch = 200 feet

EXISTING CONDITION

June 17, 2019

PREPARED FOR: Greystar 444 South Cedros Ave, Suite 172 Solana Beach, CA 92075





Senior Housing
3111 Manchester Avenue
Cardiff by the Sea, California 92007

DATE: JUNE 17, 2019 PRELIMINARY HYDROLOGY STUDY C-14